JULY
31
1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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Price 50 Cents

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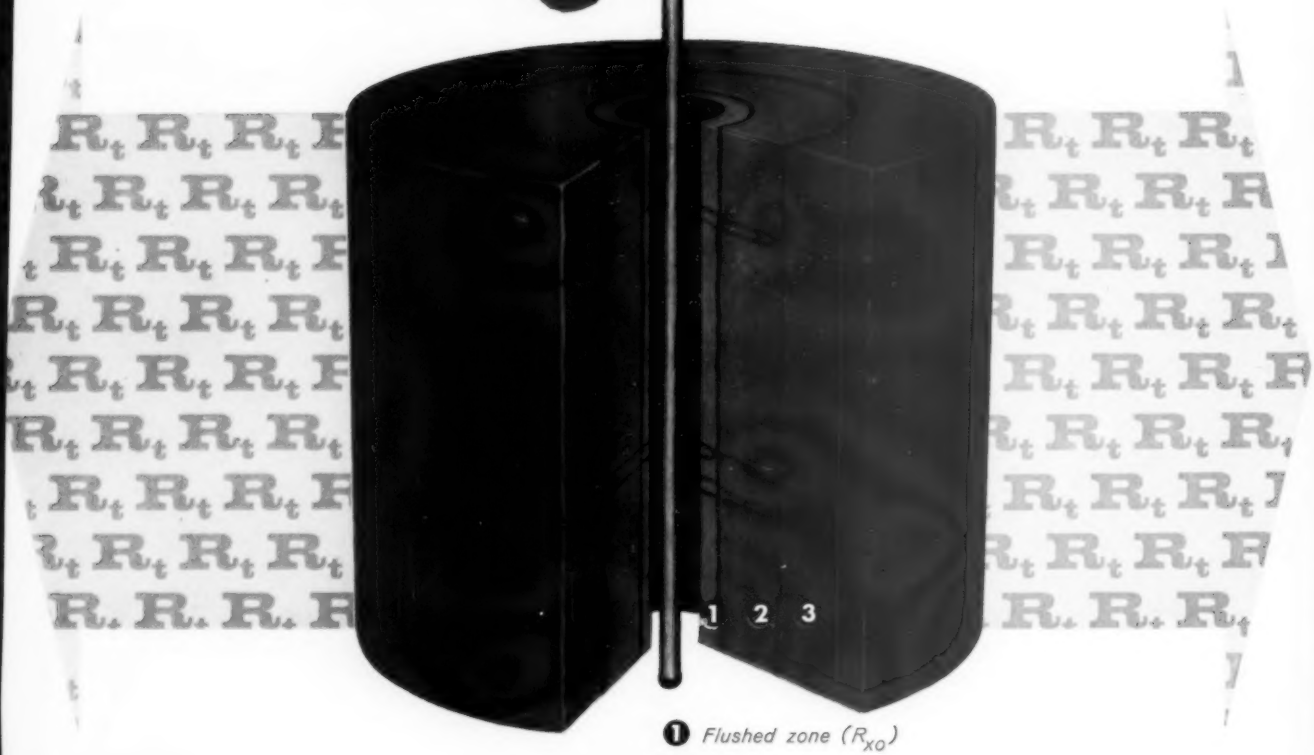
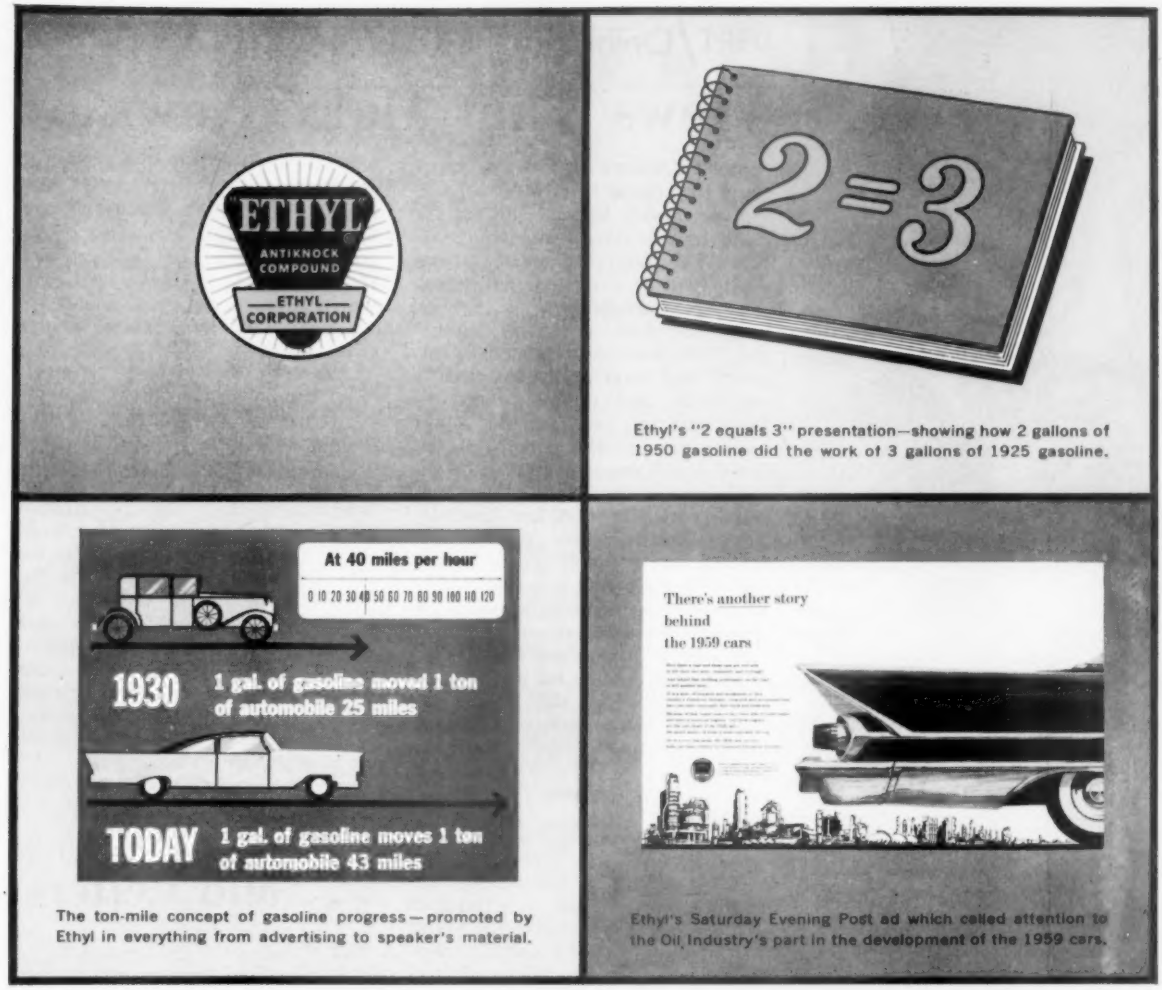


❶ *Flushed zone (R_{xo})*

❷ *Invaded zone (R_i)*

❸ *Undisturbed zone (R_t)*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This year, working closely with the Industry in the promotion of the Oil Centennial, we're seeking greater public appreciation of the Industry. Public Relations at Ethyl has covered a wide area, and these are just a few examples. But they demonstrate how Ethyl backs its awareness of a need with *action*—so Public Relations, in the truest sense, is another of Ethyl's many services.

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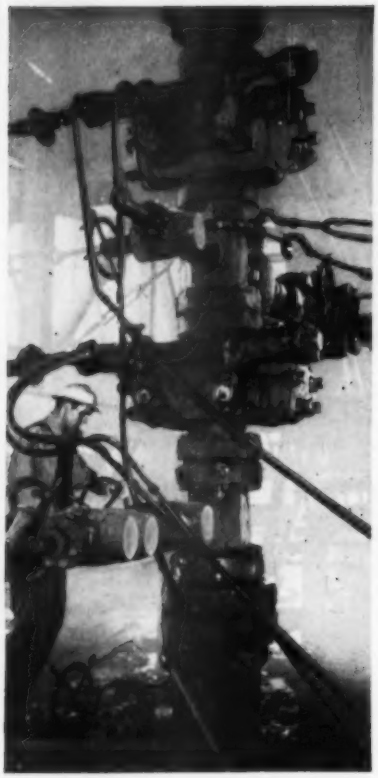

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DEPT/Opinions

Views That Make News . . .

"Your [Atlantic Refining's] sharp cut in the price of crude in East Texas appears entirely without justification in the light of current industry conditions. This action comes at a time when virtually every relevant factor affecting crude prices indicates stability. The stock picture for gasoline and other products has materially improved and is generally regarded as satisfactory, and product prices are being increased. Results of your action could jeopardize the stability of the entire petroleum industry.

"Texas independent producers, operating on a near-record low allowable, and carrying the oversupply umbrella for other areas, simply cannot explain this price cut except in terms of willingness of an importing company to erase industry progress.

"Unless your company is willing to assume responsibility for possible dire consequence to the state, to the industry, and to your company, you are urged to reconsider and restore the price cut."

—HARRY C. JONES
President
Texas Independent Producers & Royalty Owners Assn.

"The domestic petroleum industry clearly is in a dilemma as a result of serious crude price deterioration in the face of rising costs for virtually every item which goes into the search for, development of, and production of crude. The average price for crude has declined by 12¢ a bbl. since January, 1958. Further price erosion can only impair the industry's efforts to find and develop petroleum supplies.

—GORDON SIMPSON
President
Independent Petroleum Assn. of America

"Except for weather and terrain conditions, the only likely limiting factor on oil and gas exploration and development in Alberta for some years will be the provision of markets. It will require 20,000 exploratory holes to effectively explore 200,000 sq. mi. of surface under which oil and gas may be found. At the end of 1958, approximately 4,500 of these holes had been drilled.

—C. W. JACKMAN
Dept. of Mines & Minerals
Province of Alberta

"They [the pickets at Indiana Standard's Sugar Creek refinery] say, along with Oil, Chemical & Atomic Workers leaders, that they want a contract like the one the members had in 1957 when they belonged to another union [Central States Petroleum Union]. But the striking workers divorced themselves from that union and that contract last spring when they turned to OCAW for representation."

—P. H. LIVESAY
Manager
Sugar Creek refinery
Standard Oil Co. (Ind.)

"When the government sets out to regulate one phase of a business, the end results sometimes work out in curious ways. For instance, if the restrictions on crude imports have the effect which the government intended, they will stimulate exploration for oil. This exploration will result in the discovery not only of new crude reserves, but of new natural gas reserves—reserves which would not be discovered so soon if more imported crude were entering the U.S. This natural gas, of course, will enter the market as an additional competitive factor with oil and with coal."

—JOHN J. SCOTT
General Counsel
Socony Mobil Oil Co.

. . . and Letters

Dear Sir:

In respect to the proposed geological exploration in Canada's "Arctic Islands: Oil's Newest Frontier" [PW—Jul.3'59,p20], there is a great reservoir of experience that should not be overlooked. This is in the records of the exploration program carried out for the U.S. Navy in Naval Petroleum Reserve No. 4, northern Alaska, from 1946 to 1953 [inclusive].

Many of the problems, including sunlight, weather, permafrost, and marine, land, and air transportation are very similar.

Techniques and timing of all types of exploration, transportation, and construction were carefully and successfully worked out by the Navy's civilian contractors. The only major operating problem not attempted was pipeline transportation of crude.

Perhaps the biggest problem in operating in these areas is psychological . . . Well-planned operations in the Arctic need not be particularly hazardous or involve physical discomfort or unusual effort. Tedium will be a far greater problem.

EUGENE L. DAVIS
Petroleum consultant
Long Beach, California

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INSIDE Slant

HOBBLE FOR OIL BUSINESS

What have the congressional investigations directed at "undue concentration of economic power" in the hands of a few oil companies achieved?

". . . a living for lawyers but a hobble for business," in the opinion of Archie D. Gray, senior vice-president of Gulf Oil Corp.

Although there has been a trend toward mergers during the past few years, Gray cites these figures:

"In 1910 one oil company did 85% of the business in the U.S. Today, the same company does less than 11%.

"It now requires 30 large oil companies and 20,000 jobbers to share the remaining 89% of the oil business in this country."

But in the face of these facts, Gray charges, the government continues to hammer away at the oil business with the charge that too much economic power is being lodged in a few firms.

Just how big must a company be to pose a threat to the U.S. economy?

Gray says that Gulf does between 4% and 5% of the U.S. oil business; that the company must be large enough to compete abroad with government-owned firms.

LeRoy Menzing
EDITOR

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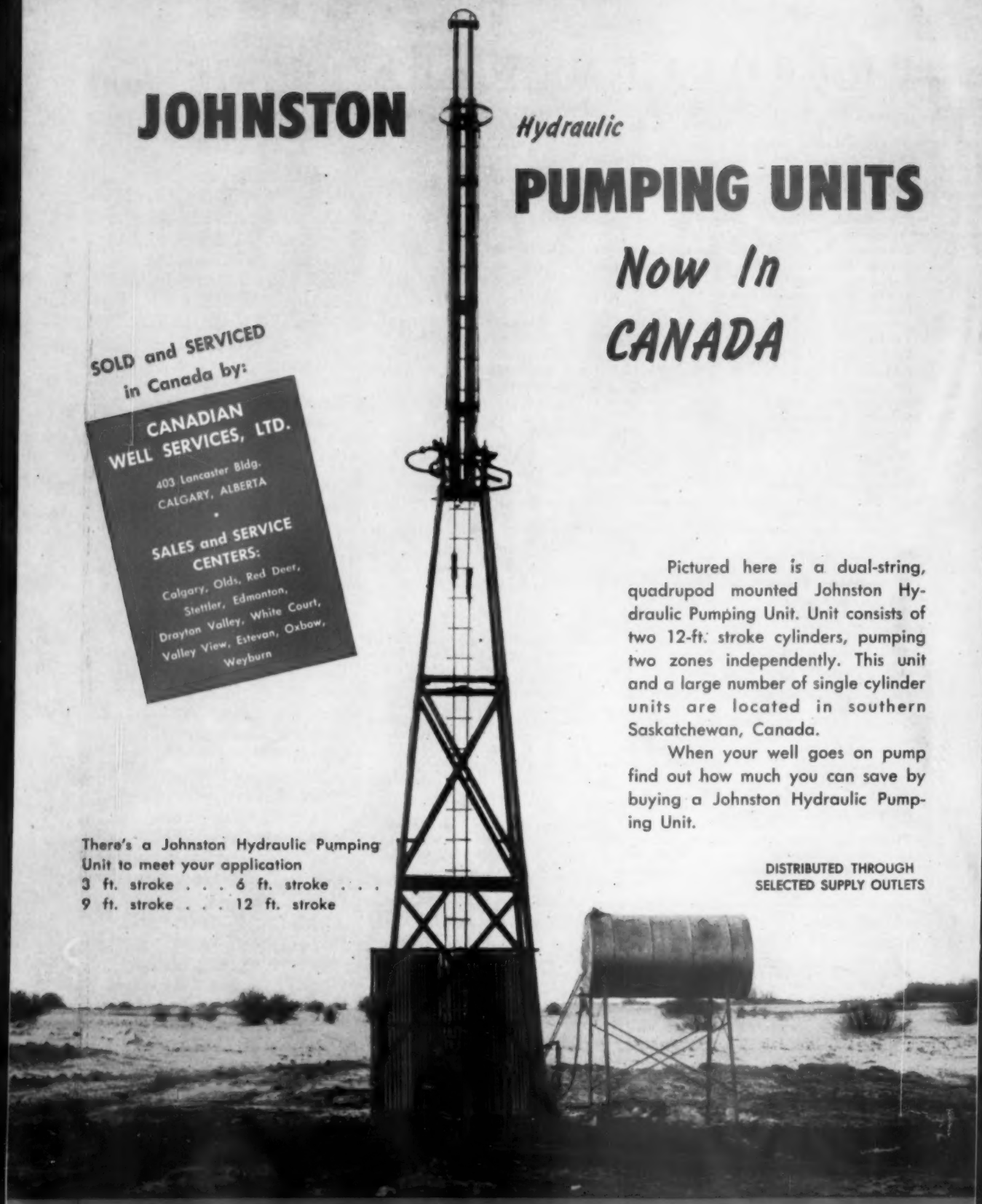

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60-Second Summary / WHAT'S HAPPENING IN OIL

July 31, 1959

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The Whiting (Ind.) refinery was struck this week, the fourth Indiana Standard plant to be closed. The reduction in runs caused by the strikes is giving new strength to the already firming gasoline market. . . . p. 14

•

New housing starts are aiding oil demand. Oil burner installations are up for the first time since 1955. Asphalt roofing demand is up 6%. . . . p. 74

•

Improved methods are being used by refiners to keep their plants clean, inside and out. They're an important step in safety programs of many installations. . . . p. 62

•

A two-fold attack is developing on future natural gas prices. The Supreme Court has warned the Federal Power Commission against "excessive" initial prices, and the commission wants to kill favored-nation escalation clauses in contracts. . . . p. 11

•

Bulk handling of mud and cement by pneumatic methods is quicker and cheaper, offshore operators say. It is fast becoming a standard offshore procedure. . . . p. 30

•

The French government will force increasing quantities of Sahara crude on the already well-supplied markets. And the move will have far-reaching impacts on the industry throughout the world. . . . p. 16

•

Producers still on their feet in the Canadian oil scramble are gaining confidence. A Petroleum Week special report shows that they see better times ahead, despite rising costs and a continuing squeeze on crude markets. . . . p. 40

•

Substantial progress has been made in the use of fluid petroleum coke for steam boilers. The problems were many, but Tidewater and a Delaware utility are working them out. . . . p. 58

•

A good market can be a big help in pipeline financing. Kaneb Pipeline Co. found this to be the case in building its products line. . . . p. 53

•

Tougher rules for new oil grants are emphasizing the shift in oil policy planning in Pakistan. The rules will speed work under new exploration grants. . . . p. 68

•

The industry's stand on 1,000-mi. oil drain intervals has been modified. The new recommendation goes as high as 2,000-mi. . . . p. 12

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK Copyright

July 31, 1959

Venezuela is exerting strong pressure to prevent spreading of Atlantic Refining's 20¢ a bbl. cut for East Texas crude. The government's concern is due to royalty contracts which are pegged to an average between East Texas and some West Texas crude postings.

The Ministry of Hydrocarbons has asked top Atlantic officials to come to Caracas to explain the reduction. Atlantic's president, Henderson Supplee, Jr., says it will be glad to do so.

The Ministry also is discussing the price cut with other companies. Presumably it wants to know if anyone plans to follow suit, and why.

And the Ministry predicts officially that the cut will be rescinded. In its weekly bulletin, it stated: "It is expected that the reduction . . . will not spread, nor be confirmed."

•

Sales of lubricating oils and greases have declined substantially since 1956. A survey of 150 companies by the Bureau of the Census provides these contrasting figures: 1958—53.5-million bbl.; 1956—59.4-million bbl.

•

Strikes at four Indiana Standard refineries will hit producers a hard blow. The company is expected to make further sharp reductions in its crude take this weekend. It is already prorating on the Texas Gulf and in Arkansas.

•

It looks like bonds and a construction stretchout instead of higher gasoline taxes for the Interstate Highway program. The House Ways & Means Committee, by a 15 to 10 vote, adopted a proposal authorizing issuance of up to $1-billion in bonds through fiscal 1961 to meet anticipated deficits. The construction program would be extended to 1976.

•

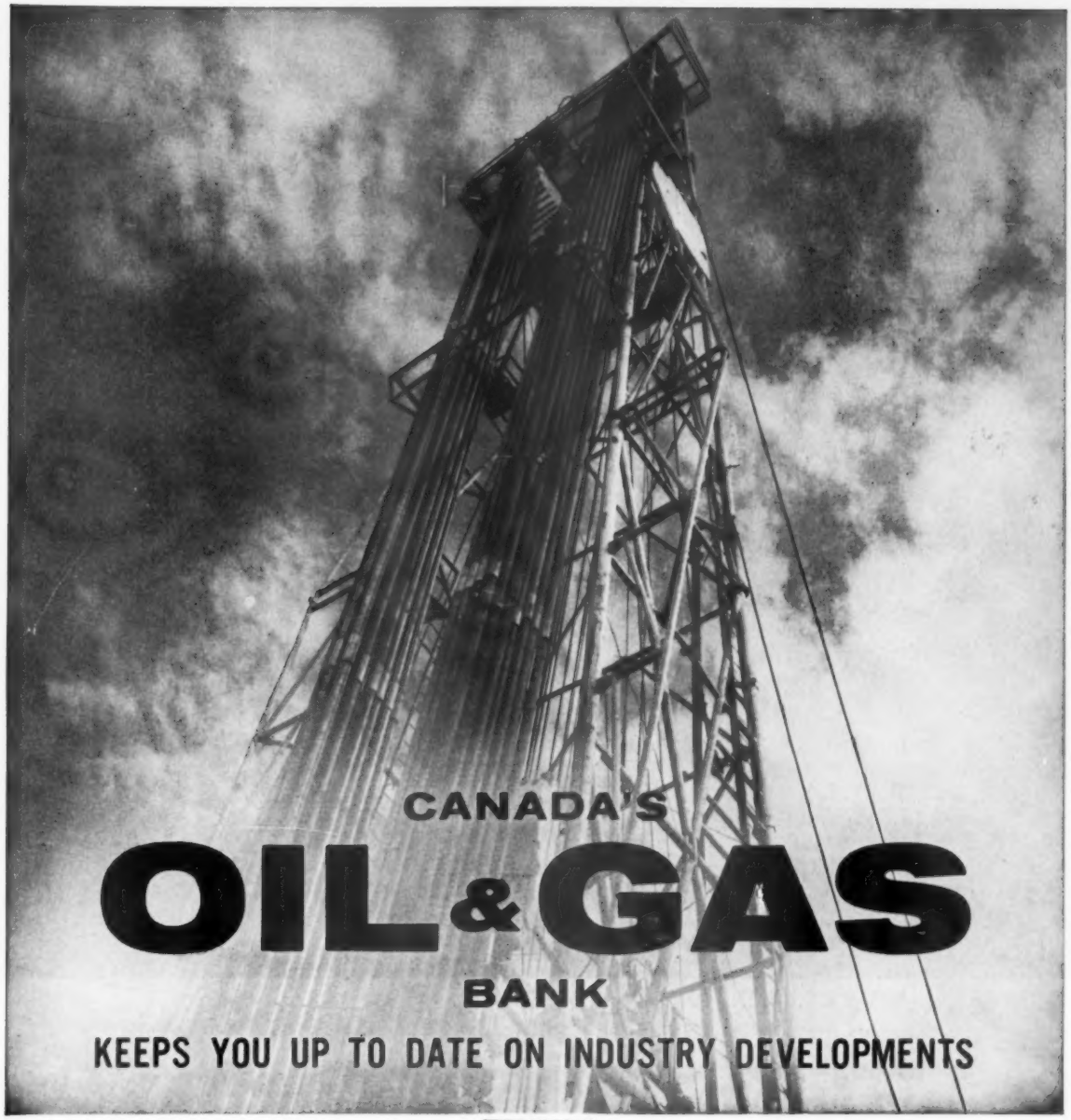
The first half meant record high sales and earnings for many oil companies. Jersey Standard's net was $315-million, up 27% on sales of nearly $4-billion. Other reports on net are: Texaco, $162.7-million, up 17.5%; Gulf, $141.8-million, up 22%; Socony Mobil $77.1-million, up 22.4%; Shell, $69.2-million, up 28.4%; Continental, $29.2-million, up 41%; and Sun, $22-million, up 90.1%.

•

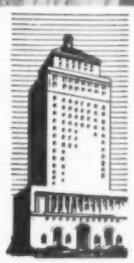
A royalty basis leasing precedent apparently has been set in the Rockies. At a sale of leases in Utah's Aneth field, Helbing & Podpecnan, Dallas, bid 77.1% royalty plus a flat $500 per acre bonus for 160 acres in San Juan County.

•

The British-owned Ultramar, Ltd., reportedly is seeking an interest in or full ownership of Texas Asphalt & Refining. Ultramar, since its sales deal with Texaco ended, has been looking for an outlet for its Venezuelan crude production.



Whatever phase of Canada's oil and gas industry may interest you, the "Royal" is well equipped to serve your banking needs through more than 300 branches in the oil- and gas-producing Western provinces. In addition, a special Oil and Gas Department at Calgary stands ready to provide you with current information and practical assistance.



The Special Bulletins issued by this department are highly valued both by those already established in the industry and those planning to enter it. A list of these Bulletins, dealing with regulations, tariffs, financing, statistics, and related matters is available on request. Write The Royal Bank of Canada, Oil and Gas Department, 409 Eighth Ave. W., Calgary, Alta.

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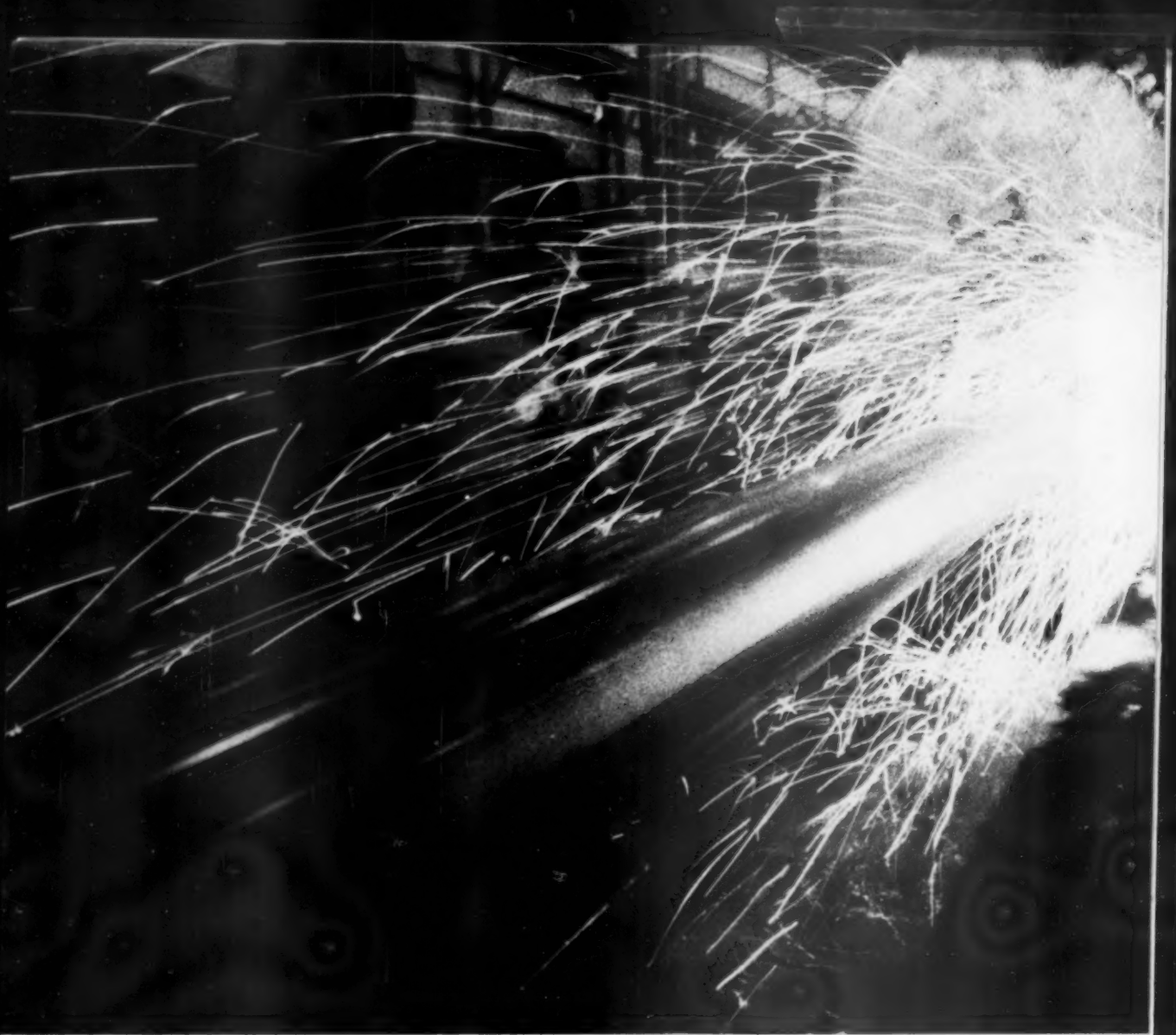

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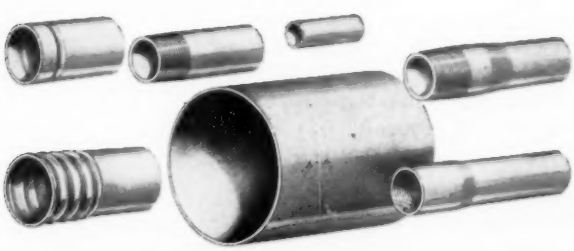

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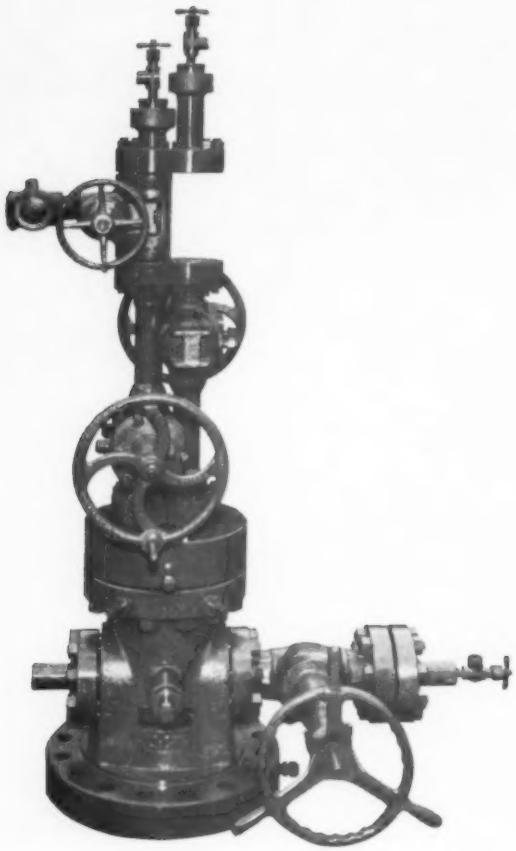

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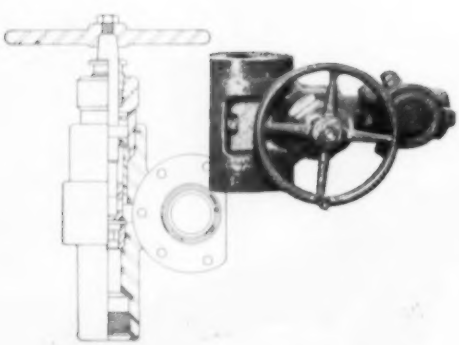

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Producers May Be Hit by Moves for Tighter Natural Gas Pricing Rules

- **The Supreme Court has ordered the Federal Power Commission to hold initial rates down.**
- **And FPC wants to kill future price escalation clauses in all producers' contracts.**

Favored-nation clauses—and other indefinite pricing escalations in the sales contracts of natural gas producers—are under serious attack before the Federal Power Commission.

FPC long has shown a distaste for gas producer contracts in which later prices to be paid for the gas are not fixed.

But the clauses exist in many, perhaps most, producer sales agreements. The clauses provide that a producer selling gas to a pipeline company is automatically entitled to any subsequent higher price the buyer may pay in the same area.

Producers contend that such stipulations are essential to their financial well-being.

The debate on favored-nation contract clauses is just one of the attacks on producer gas prices now up for review.

Just last month, the Supreme Court ordered FPC to watch initial gas contract prices to avoid "excessive rates," in its controversial ruling on the CATC offshore price (PW—Jun. 26'59,p16).

Now, however, the indefinite pricing pot is being brought to a boil before FPC.

The commission has decided to make a test case on favored-nation clauses out of a price dispute between Pure Oil Co. and El Paso Natural Gas Co.

Pure claims El Paso should pay higher rates for gas produced in the West Texas Permian Basin. Pure says a favored-nation clause in its contracts with El Paso has been triggered.

Six months ago, Pure filed with FPC for a $98,000 annual increase on its sales to El Paso. The producing company said that El Paso started paying 16¢ per Mcf. to West Texas Gathering Co. for Permian Basin gas last December. Thus, Pure said, it also wants 16¢. Its contracts call for a range of prices, from 10.5¢ to 11.17¢ per Mcf.

El Paso has gone on record against all indefinite pricing clauses.

El Paso's attorneys have tried to convince FPC Examiner Glen R. Law that its purchases from West Texas Gathering are from another pipeline —not a producer—and that Pure's complaint is out of order.

Pure's lawyers, however, drew from El Paso President Paul Kayser testimony that El Paso helped W. D. Noel, president of West Texas Gathering, to organize that company. El Paso engineered the line for Noel, financed him, and helped with the construction, according to Pure's attorneys.

Kayser also gave the examiner's hearing—concluded only last week—his thoughts on favored-nation clauses:

"We designed and negotiated favored-nations clauses in our contract. These were single-party clauses, at a time when we all thought and acted on the basis that the producer was not under regulation."

But when the U. S. Supreme Court ruled in the 1954 Phillips case that FPC had jurisdiction over producers, Kayser said, the situation became muddled.

"I could fix the price when it was free . . . But now FPC fixes the price. The only thing I can do is fix the initial price."

Kayser went on to suggest that FPC fix area prices—a set gas price for a particular pool, which would meet the favored-nation principle.

El Paso's arguments against the use of favored-nation clauses are backed up by California utility companies intervening in the case.

The Southern California companies, purchasers of gas from El Paso, were able to override objections by Pure and put into the hearing record some price testimony considered damaging to the producer argument for retaining favored-nation clauses.

But the state of Texas is taking a firm stand in favor of the price clauses.

Texas has asked, but so far has not been allowed, to intervene in the FPC hearings. But the state attorney general's office did manage to make its view known.

Texas is fearful that a ban on favored-nation clauses will mean a multimillion-dollar revenue loss to the state.

The state's 7% tax, levied on the wellhead price of gas, brought $41-million into the state treasury.

The public-interest concept in ratemaking has been defined by Congress as "just and reasonable" rates, Texas attorneys argue, adding:

"Public interest includes the interest of the citizens of Texas just as much as it does the interest of the citizens of California."

The Pure-El Paso hearings are expected to be followed by a thorough FPC examination of indefinite pricing clauses.

Originally, the Pure-El Paso case contained three major issues. First was the "alleged basis of the legality of the proposed changes." Second, was there a trigger in Pure's contracts with El Paso and, if so, how did it work?

FPC itself added the third issue. The commission asked: Is the favored-nation clause "void or voidable" as contrary to the public interest?

But FPC later, upon a motion by El Paso, severed from the current proceedings the hot issue of general public interest. There seems little doubt, however, that after disposition of the Pure-El Paso case, FPC will call more hearings to inquire into the "void or voidable" aspect.

FPC is being criticized for starting the Pure-El Paso hearings without advance notice.

In the past six months, there has been considerable legal maneuvering

in the case. Hearings were twice postponed; then, on May 28, what was billed as a prehearing conference became a hearing of record.

As one Washington gas representative observed: "Pure must be shaking its corporate head in wonder at the troubles it stirred up by asking for 16 cents."

Pure seems to have a good chance of getting its 16¢ per Mcf., at least temporarily.

In early August, the company can, under FPC rules, ask for the rate increase subject to suspension. There is speculation that El Paso moved to sever the burning issue of validity of favored-nation clauses from the Pure case in an effort to avoid the temporary increase.

But it now appears that FPC will not be able to rule on the Pure-El Paso dispute any time soon. Hearings ended only last week, and Examiner Law now is working on his own recommendations.

There is speculation that FPC might be planning to go after all indefinite pricing clauses, favored-nation, spiral escalation, price redetermination, and even the rarer types such as clauses tied to government price indexes.

FPC once before considered a ban on such clauses. The commission, after the Supreme Court establishment of its producer jurisdiction in 1954, mulled over but did not adopt a rule which would have, in pipeline certificate cases, refused to accept as evidence of reserves a contract containing a favored-nation clause.

For several years, FPC has regularly requested Congress to amend the Natural Gas Act to ban indefinite pricing clauses.

But Congress has just as regularly ignored the recommendation.

FPC's general inclination on favored-nation clauses, then, seems to be one of opposition. This does not mean, most observers say, that in the current case FPC will necessarily rule against Pure.

But most agree that it does mean that the commission's anticipated examination of the issue of validity will be vitally important to producers.

The loser in the Pure-El Paso dispute can be expected to go into the federal courts.

Because of the slow movement of the legal processes, the eventual winner—Pure or El Paso—may not be known for four or five years. A fight to the U. S. Supreme Court is not unlikely, particularly if the dispute continues to be a test case on producer pricing stipulations.

API Modifies 1,000-Mi. Lube Stand

The oil industry has backed off officially from its 1,000-mi. oil change recommendation. It has raised it to a maximum of 2,000-mi.

For years, the industry has held rigidly to the lubricate-for-safety-every-thousand-miles concept. Test after test by oil companies, committees and others provided the industry with ammunition for its stand.

In recent months, oil marketers have been waging a vigorous fight against the longer lube interval recommendations of car manufacturers (PW—May15'59,p146).

The change of pace came in the form of a brief announcement from the American Petroleum Institute, whose recommendations generally reflect the industry attitude.

The concession while brief, was pointed. It said the typical motorist should change his oil "every 30 days in winter, every 60 days in summer, but never to exceed 2,000-mi."

This oil change recommendation, API said, is based on the usual driving conditions, and "reflects both technical improvements in motor oils and the increased severity of engine service of present, high-compression passenger car engines."

The new oil approach represents a substantial step forward in the running controversy over drain intervals, and may help to clarify a sticky situation.

Even though API held firm on its 1,000-mi. recommendation, some oil companies didn't concur and promoted longer drain intervals for their own products.

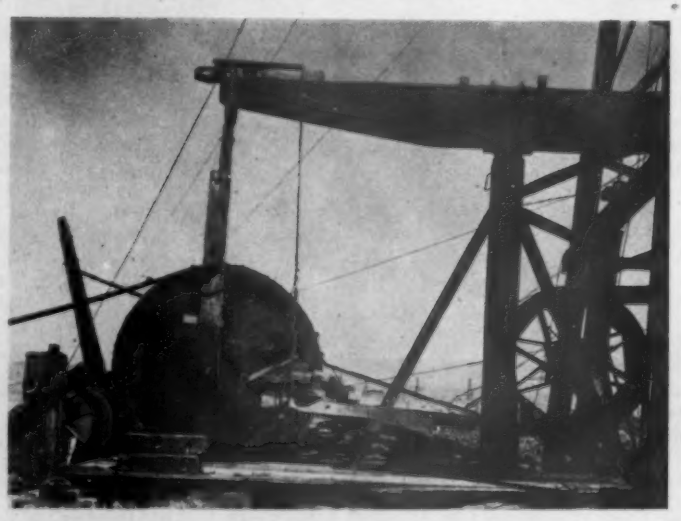
Car manufacturers didnt see eye-to-eye with the API stand at all, and their advertising claims ranged as high as 5,000-mi. for lube periods.

Auto dealers didn't go along with API, or line up with their manufacturer's recommendations, either.

A recent survey published by API showed that these franchise dealers preferred and usually recommended privately to purchasers that drain intervals be confined to 2,000 mi. or less.

A PETROLEUM WEEK survey reported only last week (PW—Jul.24 '59,p36) that the length of the rec-

Oil Man's Album



The Wheel 'Squeaked,' But It Made Hole

Cable tools, which preceded rotary drilling methods, are still used in many areas. But the modern cable tool is a far cry from the clumsy one used in California's Coalinga field.

(No. 33 in a Petroleum Week series.)

ommendation didn't make any difference anyhow—that it really didn't boost sales of new cars.

The whole matter came to a head two months ago, at the midyear meeting of API's Division of Marketing.

At Des Moines, Ia., in May, the division's general committee gave its formal approval to a recommendation of the Oil Drain Practices Advisory Group authorizing the new concept.

So far as the API was concerned, according to Adam J. Rumoshosky, director of the division, that made it official right then and there, even though it wasn't announced publicly until this week. In cautious but nonetheless significant words, Rumoshosky said:

"The new oil change recommendation had been previously endorsed by the division's lubrication committee, and therefore is likely to have the support of all segments of oil marketing."

Free World Oil Use Up; Here's Why:

New demand created by the opening of virginal consumer markets is the principal reason why Free World oil consumption will outstrip that of the U.S. in the next decade.

Historically, the American people have been the globe's greatest users of petroleum in its myriad forms.

Per capita consumption currently runs close to 780 gallons per year—roughly 13 times that of the average individual in the Free World.

But the picture is changing.

Forecasts from such authorities as the Chase Manhattan Bank indicate that Free World consumption will trot in the years to come, while that in the U.S. moves along in a more measured stride.

One area which almost tells the story by itself is the mass production of automobiles in Western Europe and the anticipated increase in gasoline consumption.

An article in the current issue of *The Lamp*, published by Standard Oil Co. (N. J.), spells this out in vivid fashion. It says:

"In America, where most people already own cars, many of the new cars simply replace older ones that are scrapped. But the typical car purchaser in Europe is a brand-new driver.

"As a car owner, he will purchase some 350 gallons of gasoline yearly . . . compared with less than one-eighth as much in the days when he rode a motor bike or scooter."

This will lead to more and better roads throughout Europe, and a corresponding increase in utilization of asphalt—another oil product.

The Lamp predicted that by 1965 sales of asphalt will have doubled in Europe, primarily for highway construction.

The mass production of automobiles overseas makes this a natural and a necessity. Last year, for example, automobile production in Western Europe exceeded four million units.

With output approaching that of the United States, and a steady increase in sight, new highway construction is a must.

It was estimated that by 1965 the Free World will be spending more than $25-billion annually on new roads. Half of this will be in the U.S., the rest abroad.

Fuel oil and home heating units are other key factors in the European consumption picture.

Oil-fired heating units are catching on in Western Europe, despite the lower cost of coal (PW—Jul.3'59, p34).

One marketer predicted installation of 250,000 oil-fired heating units this year alone. *The Lamp* went further, saying more than nine million houses will be built in Western Europe in the next half-dozen years, many of which will be heated by oil.

It anticipated that fuel oil sales will double in volume as a result of this and increased industrial expansion.

Latin America also will boom as a greater consumer of oil and oil products.

The Jersey Standard publication speculated that the rate of growth in demand in Latin America in 1965 probably will surpass even that of Europe.

In addition to a booming growth in industry, *The Lamp* said, this is what's in the wind:

By 1965 Latin America expects a rise of some 50% in her total road mileage.

The changes will be most noticeable in countries such as Argentina and Peru . . . where rural highways are primitive . . . and the chief modes of transportation are the horse and buggy or the indestructible Model T, of which thousands are in use.

Factory assembly lines in Brazil and Argentina will put together prefabricated cars, which will be much cheaper than high-duty imported models.

And so it will go around the world.

Chase Manhattan, in its just issued 1958 report, calculated world demand at 16.7-million b/d, of which 9-million was consumed in the U.S., and 7.7-million in the rest of the Free World.

The Free World growth in 1958 was 7%, compared with 3% domestically.

Chase Manhattan previously forecast a Free World demand of 29.5-million b/d in 1967. Of this, 15.1-million would be abroad and the balance, 14.4-million, in the U.S.

El Paso Tries Multiblend Pump

El Paso Natural Gas Products Co. plans to introduce gasoline blending to Southwestern motorists.

El Paso, a wholly owned subsidiary of El Paso Natural Gas Co., will begin installing the new multi-blend pumps at its service stations in West Texas and New Mexico. Next year, El Paso will extend the innovation to other states. It is the first company in the U.S. to follow Sun Oil Co.'s multiple blending innovation.

In Canada, Imperial Oil Ltd., is experimenting with blending pumps that dispense nine grades of gasoline. And in Germany, British Petroleum has started to install pumps that offer five grades.

Called "precision-blending" by El Paso, its new pump will offer motorists six grades of fuel, in addition to a regular from a conventional pump. Sun Oil offers six grades.

"The seven blends which we will offer will be of a gradually increased price," said C. Blaine McNutt, marketing manager for El Paso.

El Paso is adding the multiblend innovation to an energetic marketing campaign that began when El Paso entered the field in 1955.

Since then, El Paso has expanded its retail outlets by 250% (now more than 300) and extended its territory from Texas, New Mexico, and Arizona to Colorado and Utah.

Strikes Give Strength to Gasoline

Gasoline prices, which have advanced 0.75¢ a gal. in the past month on the Gulf Coast, are expected to strengthen further as result of strikes at four Standard Oil Co. (Ind.) refineries.

The fourth plant to be closed was the 215,800 b/d Whiting (Ind.) refinery, largest of the 12 operated by Indiana and its affiliates.

The strike at Whiting was called by the Independent Petroleum Workers of America. At the other three plants, Indiana's Sugar Creek (Mo.) refinery and American Oil's Texas City (Tex.) and El Dorado (Ark.) units—locals of the Oil, Chemical & Atomic Workers have been on strike for nearly four weeks at the latter two refineries.

Of the 480,000 b/d capacity of the struck plants, throughput of about 70,000 b/d has been operated by supervisory personnel. This week runs were stepped up to 90,000 b/d with Texas City increasing operations to 55,000 b/d.

Gasoline has been strongest in the Midwest, where the strike impact is the greatest, giving rise to speculation that Gulf Coast prices might advance another 0.25¢ a gal.

Indiana Standard early this week advanced its dealer and consumer tankwagon postings on motor fuel from 0.8¢ to 1.8¢ a gal., most of which restores "subnormal" postings to what the company called "established" price levels. Since mid-July, price increases by Indiana have affected 10 Midwestern states.

The 0.75¢ a gal. price increase on the Gulf Coast so far actually only represents a net gain of 0.25¢ a gal. from the prices in effect before the year summer downturn when gasoline markets were in the doldrums due to a general oversupply.

The effects of the strike-closed plants on gasoline inventories could backfire, however, if other companies step up runs to take advantage of the stronger market which some Midwest refiners say is the best in two years. Spot cargoes of gasoline have been closely held recently and with prices turning firmer, the tendency to boost runs will be strong.

But in the long run, past history shows that once refinery runs are increased to offset an emergency situation, there is great reluctance to reduce them when the crisis is over.

And the net effect could well be a weak gasoline market in the fall, coupled with a deteriorating distillate situation.

Indiana Standard has processing deals with several refiners to supply it with products. Some of the deals date back to the start of the Texas City and El Dorado strikes on July 1.

Estimates are that the processing deals and swaps of crude will mean increased runs primarily in Mid-Continent refineries.

The heavy distillates inventory position could be one deterrent to a big jump in refinery runs by many companies.

In fact one of the reasons for a strong gasoline market on the Gulf in recent weeks has been the impact of spot buying of gasoline by companies attempting to hold their own refinery runs down to avoid running more distillate oils to storage this far in advance of the heating season.

If the strikes—none of which involve basic wages—continue, one most likely result will be a back-up in crude supplies, since Indiana Standard is the nation's largest crude purchaser.

The company's direct purchases total more than 600,000 b/d, some of which is sold to others.

At mid-week 10,000 b/d of the West Texas crude normally lifted by Indiana Oil Purchasing Co.—crude buying affiliate of Indiana Standard—had found a taker on the Gulf Coast.

But the refiner taking Indiana's West Texas oil said that its total movement to the Gulf Coast would not be increased, indicating some of its normal takings would be displaced and seeking a new home.

Meanwhile, Indiana Oil Purchasing said it was still taking 70% of the July allowable in Texas.

The strike isn't expected to have any effect on the crude price situation in the East Texas field.

At mid-week no purchaser had followed the 20¢ a bbl. downward adjustment initiated by Atlantic Refining Co., on July 20.

Debra Damage Nears $3-million

Hurricane Debra pummeled some offshore and land installations last weekend and caused damages estimated variously from $1-million to $3-million.

First reports were that storm damage generally was minor, particularly in the light of what has happened in the past when wind and waves whipped Gulf waters.

Principal sufferer appeared to be John W. Mecom, Houston independent.

His installations at Hitchcock were hit fairly hard. Preliminary estimates placed damage at well over $1-million, and possibly as high as $2-million.

Principal item was a brick building which collapsed, wrecking offices, work shops and three planes.

Offshore, one of Mecom's derricks toppled and a barge capsized.

For the most part, other installations rode out the storm in good shape, although some sustained damages.

Standard Oil Co. of Texas and Texaco, Inc., had rigs in the path of the storm. Standard reported no damage and Texaco said it had only minor wind damage, plus loss of production that's normally expected at such times.

Standard noted, however, that well structures, tankage, boats and barges in the path of the storm suffered "considerable damage," but couldn't estimate the dollar value immediately.

A Brewster-Bartle Drilling Co. barge turned over, and Continental Marine Exploration Co., drilling for Texaco, had a barge blown off location.

Gulf Oil Corp. reported meanwhile that a fire on a rig off the Louisiana Coast had been put out. It had no connection with the tropical storm.

The fire started Sunday night with a blowout on Gulf's D-1 South Timbalier, Block 134, in Block 135 field. One man in the 12-man crew is missing and presumed drowned.

At the time of the blowout, the well was being drilled at the 4,800-ft. level in 150 feet of water.

New Home for Humble

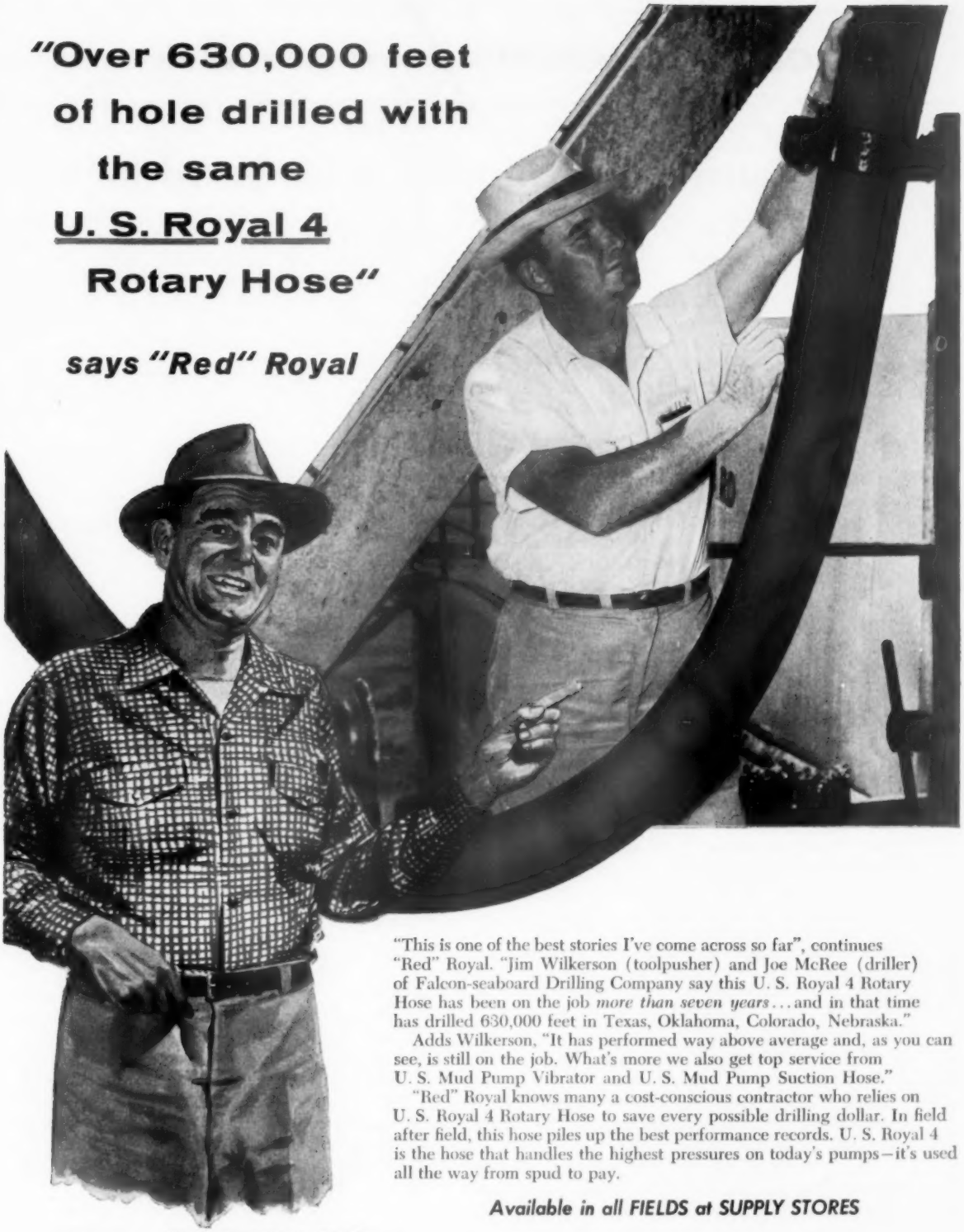
Plans for the tallest building in the Southwest—a 44-story, $32-million office building and garage—have been announced by Humble Oil & Refining Co.

It'll be located in Houston and will house Humble's 3,300 home office employees who currently are scattered over eight buildings. Humble expects to use half of the space and sublet the remainder.

It is expected to be completed in 1961.

"Over 630,000 feet of hole drilled with the same U. S. Royal 4 Rotary Hose"

says "Red" Royal



"This is one of the best stories I've come across so far", continues "Red" Royal. "Jim Wilkerson (toolpusher) and Joe McRee (driller) of Falcon-seaboard Drilling Company say this U. S. Royal 4 Rotary Hose has been on the job *more than seven years*... and in that time has drilled 630,000 feet in Texas, Oklahoma, Colorado, Nebraska."

Adds Wilkerson, "It has performed way above average and, as you can see, is still on the job. What's more we also get top service from U. S. Mud Pump Vibrator and U. S. Mud Pump Suction Hose."

"Red" Royal knows many a cost-conscious contractor who relies on U. S. Royal 4 Rotary Hose to save every possible drilling dollar. In field after field, this hose piles up the best performance records. U. S. Royal 4 is the hose that handles the highest pressures on today's pumps—it's used all the way from spud to pay.

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Why Sahara Oil Will Have Widespread Impact

The first major opening of French Sahara oil production this winter will have far-reaching repercussions on the world oil industry—far beyond the actual supplies involved.

It will have a direct and immediate impact on Middle East production and revenues, on Suez Canal traffic, on the pattern of oil trade in Europe, and on the refining and marketing investments of international oil companies in France. And some Sahara crude is almost certain to be shipped to the U.S. and Canada.

* * * *

In today's overabundant world supply, the opening of any large new oil source would, of course, be felt widely.

It would be one thing, however, if the Sahara crude were to enter the world supply stream like any other new oil—working its way into markets slowly, in competition with established sources (as the new independent production from Venezuela and elsewhere).

But this will not be the story of Sahara crude.

* * * *

The French Government is determined to see that this crude gets marketed, both in France and overseas—and is in a position to see that it does.

It has ruled that Algerian Sahara crude, which is classified as "national" production, is to have priority in French markets. It has two indisputable arguments: to save foreign exchange on imported crude, and to give the Sahara production, largely developed with government funds, priorities in France for "national considerations" (a point which U.S. companies, in view of U.S. import restrictions, are not in a good position to argue).

Recently, the government served notice that refiners in France are to make a home for 80% of the scheduled Sahara production for the next few years, starting next January, after the first pipeline from the Hassi Messaoud field is opened. (For the time being, the French will try to market the remaining 20% overseas on their own.)

The 80% rule applies not only to French-owned refiners, but also to French affiliates of the five big international companies—Esso, Socony, Caltex, Shell, and BP—which own and operate the major share of France's refining and marketing facilities.

These international companies, in fact, have been left little choice but to sign three-year contracts starting Jan. 1, 1960, to purchase their respective shares of Sahara crude—at only a minor 15¢ discount. The contracts are with SN Repal, the government company which owns half the Hassi Messaoud field. The other half of Hassi Messaoud oil, owned by Compagnie Francaise des Petroles, will be used in the CFP and Antar refineries.

Thus, the French government has automatically assured a home for 80% of the Sahara production for the next few years—all at once, so to speak, and without price or other competition.

* * * *

This does not mean that 80% of the Sahara production will necessarily go to France. It merely means that refiners operating in France are "responsible" for taking that much.

Actually, the French are encouraging the international companies to move some of their Sahara allotments overseas, especially to the U.S. and Canada—partly as a means of earning hard currency, and partly for quality reasons.

The light Sahara crude (over 40 degrees API gravity) is particularly unsuited for the French refinery-yield pattern, where demand runs primarily to heavy products. If all French refineries switched over to Sahara crude, France would soon have gasoline running out of its ears. The Sahara crude, on the other hand, is almost ideal for the gasoline-oriented U.S. market.

Some companies, therefore, are thinking of shipping part of their Sahara allotments to the U.S. and Canada (in place of Middle East or Venezuelan imports), and shipping corresponding amounts of heavier Middle East crudes to their French refineries: to come up with a more suitable crude mixture for France.

"Thus, while the French Government can't force the international companies to market the Sahara crude overseas, it can do so within France—and this, in the end, amounts to much the same thing," comments one oil executive.

* * * *

Some oil executives also suspect that the French are trying to work out some kind of priorities for their Sahara oil in the European Common Market. Others doubt this is a real possibility, particularly since the Common Market treaty specifically provides there are to be no tariffs on crude oil imports from any sources.

There is no doubt, however, that the French are actively seeking to line up additional outlets by trying to interest industrialists in other Common Market countries, particularly in Germany, in investing in Sahara oil development.

* * * *

At any rate, the large-scale opening of Sahara production will have far-reaching repercussions on the oil industry. For instance:

- It will have a direct impact on the Middle East. Some 90% of present French crude imports come from

the Middle East (the remainder consisting largely of specialty crudes from Venezuela). So Middle East production will be cut back, immediately and by rapidly rising volumes, practically on a barrel-per-barrel basis for Sahara production.

This will be reflected in revenues of Middle East governments more directly than the slow attrition experienced from other new sources cutting into markets. For instance, just to make room for the 300,000 b/d Sahara oil slated to be taken by French refiners in 1961 will mean a revenue loss to Middle East governments of some $77-million annually.

• It may mean a corresponding slowdown in earlier Suez Canal traffic estimates. By displacing Persian Gulf shipments to Europe, the new Sahara production (as well as the new Libyan discoveries) may well affect the scheduled Suez Canal expansion schemes.

• It will mean a substantial loss of profits to the international oil companies now supplying France. All of them own large Middle East reserves of their own. As one executive puts it:

"After all, the Middle East production we'll have to shut back in order to run the Sahara crude is a heck of a lot more profitable to us than the 15¢ discount we'll get for refining Sahara oil."

The price issue is a particularly irksome one to the companies. In the first place, many of them feel that the initial Hassi Messaoud posting of $2.77 is too high. And the companies had hoped to get at least 25¢ to 30¢ off that—as a return for the use of their refining and marketing facilities. But SN Repal held out for $2.62—and one major company (with forthcoming Sahara production of its own) finally agreed. "We all had to go along then," oil sources report.

• It will be a direct blow to the refining and marketing investments of international companies in France.

"We didn't invest hundreds of millions of dollars in those refining and marketing facilities just for the fun of marketing in France," comments one executive. "There's not enough return in that. We built those facilities primarily to provide outlets for our own crude. To the extent we have to refine somebody else's crude, we figure those investments are wasted."

Comments another: "The volume of Sahara crude we'll have to take by 1961 will be equal to 50% to 60% of our French refining capacity. This means in effect that we'll be handing the government the free use of 50% to 60% of our refining and marketing investments."

• It will put the international companies, for all their large Middle East reserves, under increased pressure to develop French "national" production of their own.

"In the long run," says one U.S. oil man, "no refiner can look with equanimity on continuing his operations in France without developing his own sources of national crude."

Of the international group, Shell is the only company with Sahara oil of its own thus far (through its 35% share in Creps). Esso has the small Parentis field in France, but no Sahara discovery as yet. All the companies are now stepping up their exploration efforts in the Sahara as well as in French Gabon (also classified as "national" oil).

• It will pose a somewhat awkward situation for Compagnie Francaise des Petroles, the French Government-controlled company which owns a 23.75% share in Iraq and Qatar production, and 6% in Iran. The Middle East crude is far more profitable to CFP, barrel for barrel, than its Hassi Messaoud production.

However, the Sahara crude will receive a priority in France over CFP's Middle East oil. What CFP will do with its backed-up Middle East crude is a big—and unanswered—question (particularly since Iraq and Iran production is slated for sharp expansion).

* * * *

Initially, the volume of Sahara oil coming to market next year won't be large enough to create a really serious problem (scheduled 1960 output: 180,000 to 200,000 b/d). The impact will really start to be felt, however, the following year, when the second Sahara pipeline is in operation (page 66).

By then, Sahara production is scheduled to average 360,000 to 400,000 b/d, and total French national output about 420,000 to 460,000 b/d.

It now appears that about 45% of France's refining capacity will be assigned to national crude in 1961, under the following targets recently outlined by France's petroleum authority (figures in b/d):

Sahara Production	
To be refined in France	220,000
To be exported by producers	60,000
To be exported or exhanged by refiners	80,000
Total Sahara production	360,000

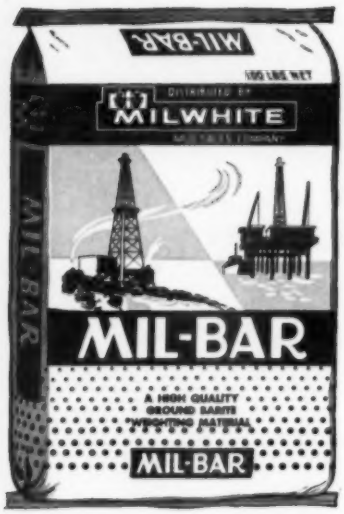
French Refinery Runs	
Sahara crude	220,000
Parentis, Gabon 'national' crude	60,000
Venezuelan & Russian imports	60,000
Middle East imports	300,000
Total refinery runs	640,000

* * * *

Sahara production will continue to grow by leaps and bounds for some years thereafter. The actual volumes are anybody's guess. French government estimates of "national" crude supply run as high as 580,000 b/d by 1962, 700,000 in 1963 and a whopping 1,000,000 b/d by 1965 (PW—Jul.17'59,p10).

Industry sources are hopeful that the latter estimates are exaggerated, and put likely 1965 production closer to 600,000 to 700,000 b/d. Even so, it seems clear that the Sahara potential will soon come close to France's entire requirements.

"As the volume builds up," concludes one oilman, "the handwriting will be on the wall."



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What's New / IN THE INDUSTRY

An industrywide meeting on wider well-spacing seems to be in prospect for this fall. Tentative plans are for it to be held in Dallas or Houston under the sponsorship of the Oil Industry Conservation Forum, headed by Jake L. Hamon, Dallas independent. Possible tie-in dates would be the Texas-Mid-Continent Oil & Gas Assn. meeting in Houston Sept. 15-17, or the Independent Petroleum Assn. of America meeting in Dallas Oct. 26-27.

•

Oil men spent almost $20-million for oil and gas rights in Canada's Alberta province this week. Texas Pacific Coal & Oil, Pure Oil and Bailey Selburn Oil & Gas jointly paid $2,620,882 for a 43,645-acre tract in Al Hambre reserve near Rock Mountain House and Willesdene Green. Pan-American Petroleum and British American paid $1,351,000 for a 320-acre tract in Swan Hills field.

•

Five Texas lawmakers have protested to the Texas-Mid-Continent Oil & Gas Assn. about its stand on the natural gas tax. The state representatives, in a letter to Executive Vice-President Charles E. Simons, expressed belief that most association members want the tax to be applied to buyers rather than producers. The letter charged that Mid-Continent's representatives on Austin had been helping to block the tax.

•

The Independent Petroleum Assn. of America has set up a special study committee on natural gas legislation. The group, headed by F. Allen Calvert, Jr., president of Calvert Drilling, Inc., Tulsa, is to consider the type of legislation which "would provide a solution to the worsening problem of federal regulation of natural gas producers."

•

The August allowable for Louisiana crude has been set at 913,825 b/d, up 12,171 from July. North Louisiana wells were assigned 120,576 b/d; South Louisiana wells were assigned 793,249 b/d, of which offshore wells will get 198,744 b/d.

•

The Japanese reportedly are looking for U.S. tankers for a share of their offshore Neutral Zone concession. Failure of Arabian Oil Co.'s backers to produce enough capital to assure continuation of drilling prompted the move.

•

A "realistic approach" has been urged in plans to use nuclear force on underground shale deposits. The recommendation came from John Crawford, Bureau of Mines Coordinator of Atomic Energy Technology who says an experimental program is needed to test "essentially sound ideas."

•

The ultimate natural gas customer should be considered in arms-length bargaining between producers and pipeline companies, a San Diego Gas & Electric Co. official argued last week. C. Haydon Ames, appearing before the Federal Power Commission considering Transwestern Pipeline Co.'s West Texas to California line, said that "because of necessity, there is a market in Southern California at any price." He objected to FPC Examiner Harry Frazee's recommendation of 45¢ per Mcf. to distributors, but said he would rather have gas "at that price than no gas at all."

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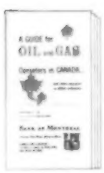

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While the Bank is prepared to provide all available information on the oil industry, it does not make recommendations regarding the purchase of individual oil stocks.

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RESOURCES EXCEED $3,000,000,000

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
July 31, 1959

Fair trade proposals in Congress are dead for this session. Last week, a Senate commerce subcommittee headed by Sen. Strom Thurmond (D., S. C.) quietly shelved bills to create a national fair trade law. The subcommittee had held hearings and, with similar legislation pending in the House, fair trade advocates were beginning to think a law really had some sort of chance this year. But with the Thurmond subcommittee's inaction, earlier estimates of the situation—that no legislation would be passed this session—now are verified.

But if the House should pass a fair trade bill soon, 1960 could be the year of enactment. The bill is awaiting action by the House Rules Committee. If it reaches the house floor and is passed, the Senate bill will be under pressure next year—an election year—to enact the law. Meanwhile, there appears little chance that the oil industry will adopt any unified position on fair trade: Some major companies want such a law, but oil jobbers and other companies are opposed.

•

A Federal Power Commission rift between the staff and other officials continues to be apparent. For some years, there has been a philosophical division in FPC, with staff attorneys holding out for utility treatment of natural gas producers. This basic disagreement on regulatory powers often manifests itself in hearings before examiners.

•

FPC now has on its hands a new and vivid example of this split. An examiner, after hearing a producer case, this month expunged from the record a memorandum filed by a commission staff counsel. The examiner used strong language—an "improper, irresponsible, and contemptuous document"—in condemning the staff counsel's action. The examiner accused the counsel of taking exception to a decision that had not then been filed, and said the staff lawyer "violated professional ethics." Thus the internal controversy at FPC continues.

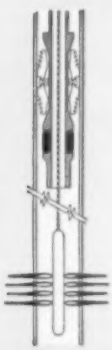
•

The National Petroleum Council will report within a few months on the industry's "manpower reserve" for the government. Interior Secretary Fred Seaton has asked NPC to recommend a program for establishing a civilian reserve—industry men to work with the government in event of an emergency. The study is progressing and probably will be made public when NPC meets in Washington about Oct. 20. An interim report may be ready on another assignment: a survey of radar and radio facilities used by the petroleum industry.

•

The depletion issue is getting support from a consumer area—New England. The New England Council, an organization representing some 3,300 business and industrial firms, has written the House Ways & Means Committee in support of the 27.5% depletion rate for oil and gas. The council indicated concern that a change in the depletion percentage might increase fuel costs in New England. The House committee will start general tax hearings in November and is expected to study depletion. Traditionally, much of the industry's political opposition to the 27.5% rate comes from New England lawmakers. Backers hope the New England Council's position will offset some anti-depletion sentiment in that area.

Here's what you can do with the **BAKER FULL-BORE RETRIEVABLE CEMENTER**

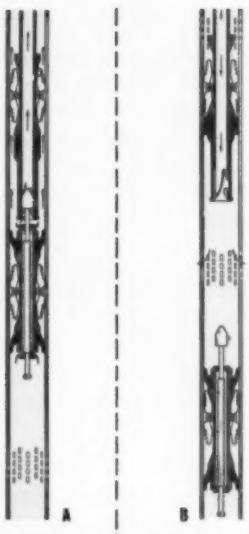


PERFORATE

FRACTURE ACIDIZE CEMENT

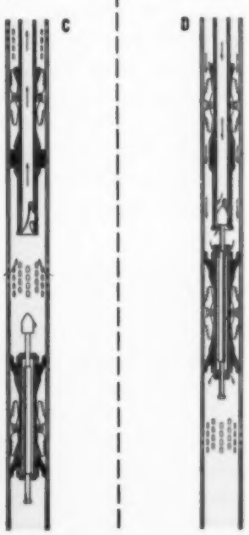
SWAB AND TEST

or use it with a **BAKER RETRIEVABLE BRIDGE PLUG** for as many straddle operations as required... in **ONE ROUND TRIP!**



A — Run tools in together

B — Release Plug, straddle interval, fracture or acidize



C — Swab and Test

D — Pick up plug, move to next interval

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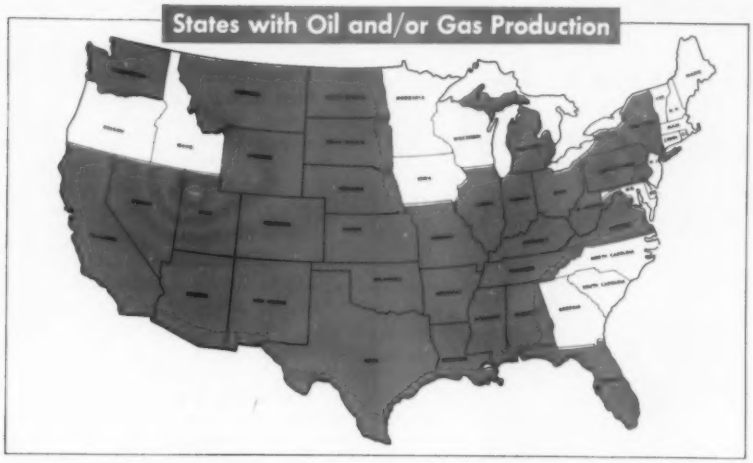
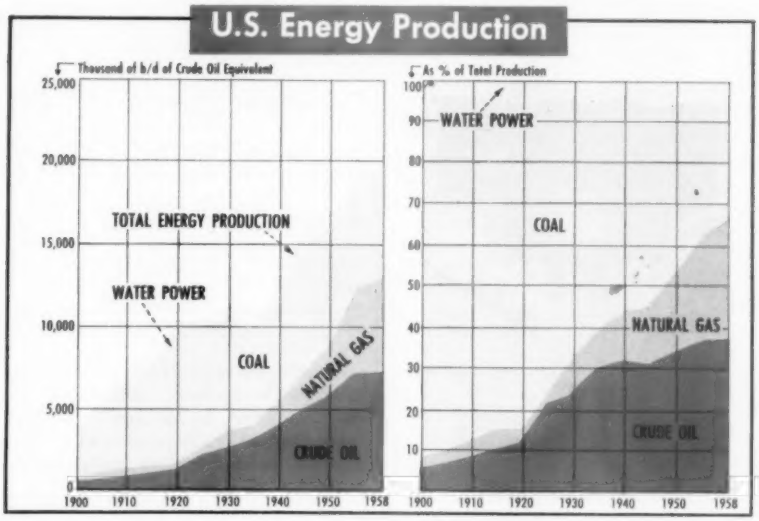
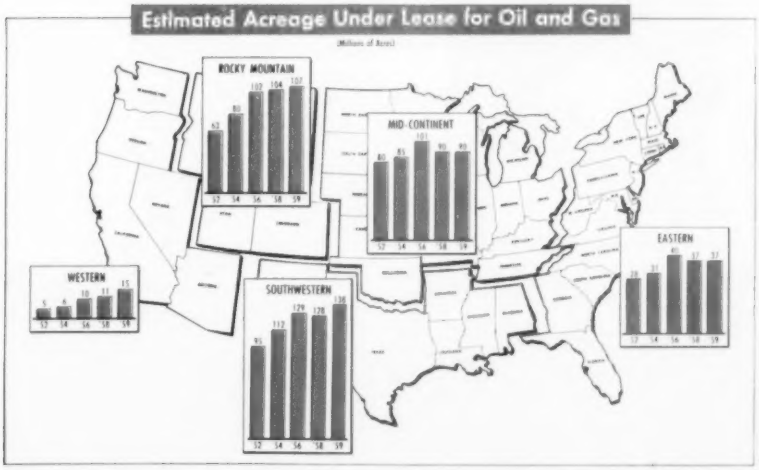
IPAA Traces Oil's Growth Since 1859







Since 1859, the U.S. petroleum industry has:

- **Drilled some 1,730,000 holes;**
- **Found more than 100-billion bbl. of petroleum reserves;**
- **Produced nearly 65-billion bbl. of crude.**

These are some of the highlights of the special 1959 Centennial edition of "The Oil Producing Industry in Your State," published by the Independent Petroleum Assn. of America.

This is the fifth edition of the booklet, which has been issued every other year since 1950. From now on, however, the booklet will be published on an annual basis, as a "13th edition" of the IPPA Monthly, official publication of the association.

The new booklet goes beyond previous issues in that it describes the scope and importance of oil and gas to the various producing states.

Two new states—Arizona and Washington—have been added to the list of producing states (map). Oil was discovered in Washington in 1957, and in Arizona in 1958 (in commercial quantities).

Oil also is being produced in Alaska, but sufficient data is not yet available to warrant including the 49th state in the booklet. Detailed statistical information is given, however, for the other 31 producing states.

At the end of 1958, there were 574,515 producing wells in the U.S.

These wells, the IPPA booklet says, produced an average of a little more than 12 b/d during 1958 from 24-million acres which have been proved productive of oil or gas.

Of the 1,730,000 holes drilled since 1859, 1,120,000 (65%) were completed as oil wells; 135,000 (8%) as gas wells; and the remaining 475,000 (27%) were dry holes.

About 3.5-billion bbl. of liquid petroleum reserves (crude and natural gas liquids) were found last year, pushing the total of known reserves to 36.7-billion bbl. as of Jan. 1, 1959, IPPA reports.

This total includes 30.5-billion bbl. of crude reserves, and 6.2-billion bbl. of natural gas liquids.

The over-all increase amounted to 752-million bbl. after deducting the year's production.

Natural gas reserves increased by 19-trillion cu. ft. last year, raising proved reserves to 254.1-trillion cu. ft. Since 1859, the booklet shows, 412.5-

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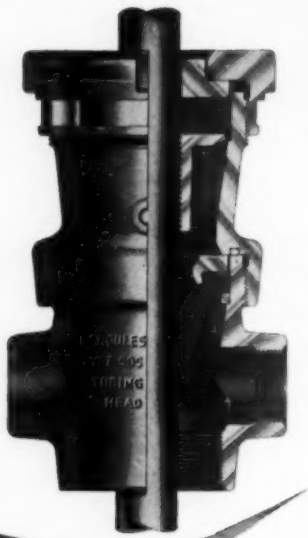
produce MORE oil
at LESS cost

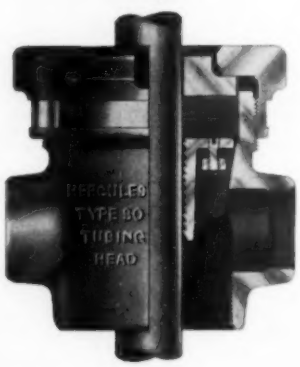
HERCULES TYPE SOS
TUBING HEAD

Hercules "Type SOS" is a 4000 pound test stripper tubing head. The lower section contains the neoprene tubing stripper; the upper section or bowl contains the slips and packing arrangement. The SOS is unsurpassed for use in well servicing operations in addition to its use in flowing wells.



HERCULES TYPE SO
TUBING HEAD

Hercules "Type SO" tubing head is actually the lower section of the "Type SOS" tubing head, containing the slips and packing arrangement. It is particularly suitable for pumping due to its compactness, being approximately 12 inches high.



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trillion cu. ft. of gas reserves have been found.

Texas leads all states in total cumulative production and in reserves found. As of Jan. 1, 1959, 23.8-billion bbl. of liquid petroleum were produced of 41.5-billion bbl. found.

Since 1948, the petroleum industry has increased its capacity at a faster rate than actual production, with the result that the producing capacity shut-in has increased steadily, says IPAA.

U. S. capacity to produce crude and natural gas liquids reached a record high of more than 10.5-million b/d by the end of 1958.

Of this, almost 3-million b/d was shut-in for lack of market during 1958. Average production in 1958 was 7.5-million b/d, of which 6.7-million b/d were crude.

The petroleum industry, however, continues to supply an increasing part of the U.S. energy market, IPPA adds. In 1900, for example, petroleum supplied only 8% of U.S. energy requirements (charts). By 1958, the petroleum industry was supplying more than 67%, IPAA says.

Crude and natural gas valued at $9.3-billion were produced by the domestic industry last year, the IPAA booklet reports.

The total value of all mineral production was $16.3-billion. Petroleum, therefore, accounted for 57% of the total value of all minerals produced last year. Production of this oil and gas was accomplished by a work force of about 310,000 in 1958.

The broad scope of the petroleum industry is further emphasized by the fact that as of Jan. 1, 1959, more than 382-million acres had been proved productive or were under lease for oil and gas.

This acreage amounts to 20% of the total land area of the U.S., the IPAA booklet notes.

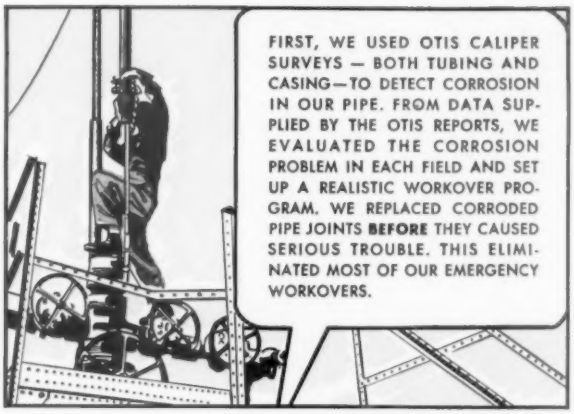
The vast majority of this acreage—about 358-million acres—was under lease (map).

More than 25% of the land area in 14 states is under lease, with North Dakota's 49% of total land area productive or under lease topping the list. Other high percentages include Wyoming, 48%; Oklahoma, 47%; Florida, 46%, and Texas, 43%.

The booklet also contains a new special section, entitled "The Importance of Oil and Gas to Consumers in Your State." This covers all states, producing and nonproducing, and includes the percentage of total state taxes derived from fuel and vehicle taxes, and the percentage of energy consumed in each state.

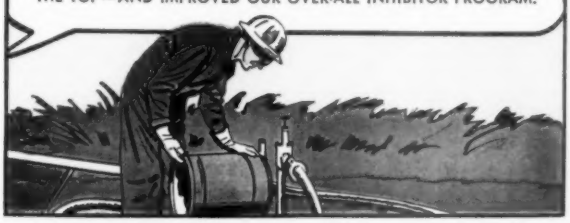
OTIS CORROSION SURVEY SERVICES

AND A STEPPED-UP CORROSION MITIGATION PROGRAM
LET US REDUCE OUR WORKOVER COSTS FROM $500,000 TO $179,000
ANNUALLY. HERE'S HOW WE DID IT.

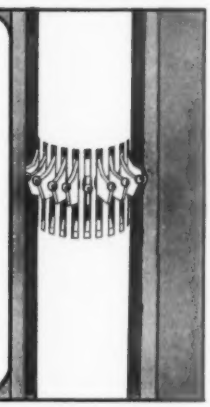


FIRST, WE USED OTIS CALIPER SURVEYS — BOTH TUBING AND CASING—TO DETECT CORROSION IN OUR PIPE. FROM DATA SUPPLIED BY THE OTIS REPORTS, WE EVALUATED THE CORROSION PROBLEM IN EACH FIELD AND SET UP A REALISTIC WORKOVER PROGRAM. WE REPLACED CORRODED PIPE JOINTS **BEFORE** THEY CAUSED SERIOUS TROUBLE. THIS ELIMINATED MOST OF OUR EMERGENCY WORKOVERS.

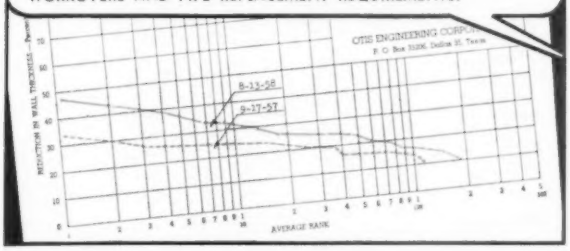
SECOND, WE SCHEDULED PERIODIC OTIS CALIPER SURVEYS TO EVALUATE CORROSION INHIBITORS. WHEN WE'D CHANGE INHIBITORS, OR USE A NEW TECHNIQUE TO APPLY THEM, WE'D HAVE OTIS CALIPER EACH WELL BEFORE WE INTRODUCED THE INHIBITOR AND THEN AGAIN IN FOUR TO SIX MONTHS. THIS GAVE US A CHECK ON THE PROTECTION AFFORDED EACH JOINT OF TUBING IN OUR WELLS — FROM THE BOTTOM TO THE TOP—AND IMPROVED OUR OVER-ALL INHIBITOR PROGRAM.

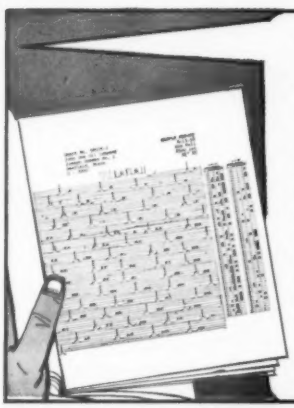


HERE ARE THE PRIMARY REASONS WE PREFER OTIS' CALIPER EQUIPMENT: THEIR INSTRUMENT GIVES US A DIRECT MECHANICAL READING—LESS CHANCE OF DISTORTION. CLOSELY-SPACED SPRING-LOADED FEELERS PRESS AGAINST THE INSIDE WALL OF THE PIPE TO MEASURE THE PIT DEPTHS. AS PITS ARE ENCOUNTERED, DIRECT ACTION FROM THE FEELERS CAUSES A ROTATING STYLUS TO PLOT THE PIT DEPTH AND LOCATION ON A METAL CHART WITHIN THE TOOL.



BESIDES LOCATING AND REPORTING DAMAGE TO PIPE THAT WILL CAUSE IMMEDIATE TROUBLE, OTIS' CORROSION REPORT ALSO INCLUDES A "PIT DEPTH RANK CHART" WHICH RANKS THE PIPE JOINTS ACCORDING TO THE DEGREE OF CORROSION DAMAGE DETECTED. THIS CHART ENABLES US TO EVALUATE OUR CORROSION CONTROL PROGRAM, AND HELPS US ANTICIPATE WORKOVERS AND PIPE REPLACEMENT REQUIREMENTS.





WE BELIEVE THE OTIS CALIPER SURVEY REPORT IS THE MOST COMPLETE WE CAN GET. IT INCLUDES — (1) A WRITTEN INTERPRETATION OF THE CALIPER CHARTS; (2) ENLARGED PHOTOCOPIES OF THE ORIGINAL METAL CHARTS TAKEN FROM THE CALIPERING TOOL; (3) A JOINT-BY-JOINT CLASSIFICATION SHEET, AND (4) THE PIT DEPTH RANK CHART. WHAT'S MORE, WE KNOW WE CAN RELY UPON THE INTERPRETATION GIVEN EACH OTIS CALIPER SURVEY.

THERE ARE OTHER WAYS YOU CAN USE OTIS' CALIPER SERVICE TO REDUCE WORKOVER COSTS. HAVE OTIS CALIPER PIPE IN THE YARD SO THAT YOU CAN SEGREGATE THE JOINTS FOR DIFFERENT USE. HAVE OTIS RUN ROD WEAR SURVEYS — AND CALIPER OLD PRODUCING WELLS YOU PURCHASE TO DETERMINE THE CONDITION OF THE PIPE, AND TO LOCATE SUB-SURFACE EQUIPMENT IN THE WELL.

OTIS' CORROSION SPECIALISTS CAN TELL AT A GLANCE AT THEIR CALIPER CHART THE DIFFERENCE BETWEEN PITS, MILL DEFECTS, TUBING COLLARS, OR JUST IRREGULARITIES IN THE TUBING WALL. AND OTIS CAN CALIPER TUBING OR CASING FROM 1¼" UP TO 9⅝". IF YOU WANT TO REDUCE YOUR WORKOVER COSTS AS WE DID — CALL OTIS. LET THEIR CALIPER SERVICE EXPERTS HELP YOU WITH YOUR CORROSION MITIGATION PROGRAM.

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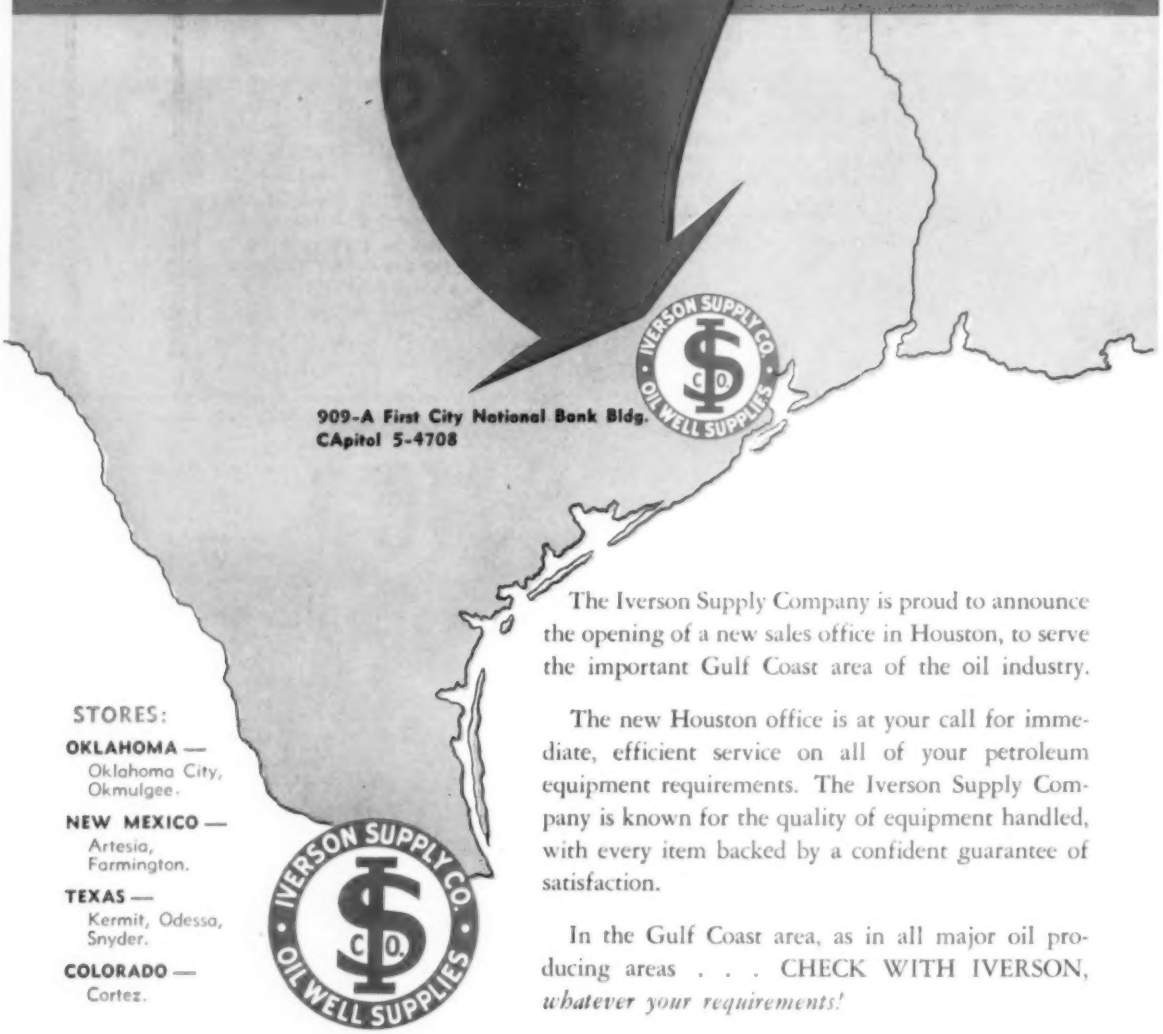

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Is fracturing a . . .

Key to Nuclear-Waste Disposal?

The federal government has taken to the oil patch to determine whether the well-fracturing technique is the answer to safe disposal of radioactive wastes.

The prickly question of how to get rid of the growing amount of dangerous residue from processes utilizing nuclear energy is becoming more critical.

Dumping of such wastes in the ocean has been questioned in some quarters.

And, obviously, the procedure of sealing up the material in expensive containers and planting them underground has definite limitations.

So the government is looking hard for some more practical, less expensive way of doing it.

The petroleum industry's well-fracturing technique, evolved as a means of getting more oil from tight formations, could be the answer.

As one step in the new study, representatives of the Atomic Energy Commission and other government agencies recently made an on-the-spot check of a Continental Oil Co. frac job.

Besides AEC itself, the representatives came from the Oak Ridge and Livermore AEC laboratories, the U.S. Geological Survey, and the Bureau of Mines. They came to see Conoco perform a fracturing job on one of the company's new completions in the Sacatosa field, Maverick County, Southwest Texas.

The 22-ft.-thick San Miguel pay section in the field is notoriously tight. Conoco has been conducting an experimental fracturing program in an effort to increase the per-well production rate.

The demonstration apparently impressed the government visitors with the potential that fracturing holds for disposal of nuclear wastes.

They evidently had been skeptical of the method and of the results claimed before the demonstration. And though they made little open comment after the job was completed, they were visibly impressed by the obvious breakdown of the formation under pressure, with a resulting absorption of great quantities of fracturing fluid and sand by the formation.

Evidence of their pre-job skepticism was the fact that some of them expressed the opinion that the injection of such quantities of fluid and sand would cause the ground to rise noticeably at the surface.

So careful measurements were made with surveying instruments, before, during, and after the job.

Conclusion: There was no distortion at the surface.

More time and much testing will be required to determine whether the well-fracturing process can solve the disposal problem.

After the demonstration, one of the officials said: "We just wanted to see exactly what the oil industry does on these things, and how it does it.

"But we'll have to know a lot more before we can decide whether we can use these methods.

"For one thing, we have to be absolutely certain there will be no danger to the population of the country.

"And we have to be sure, too, it is something that will give Uncle Sam a dollar's worth of value for every dollar he spends on it.

"We have to be very careful because there already is a lot of public misunderstanding about this radioactive-waste business."

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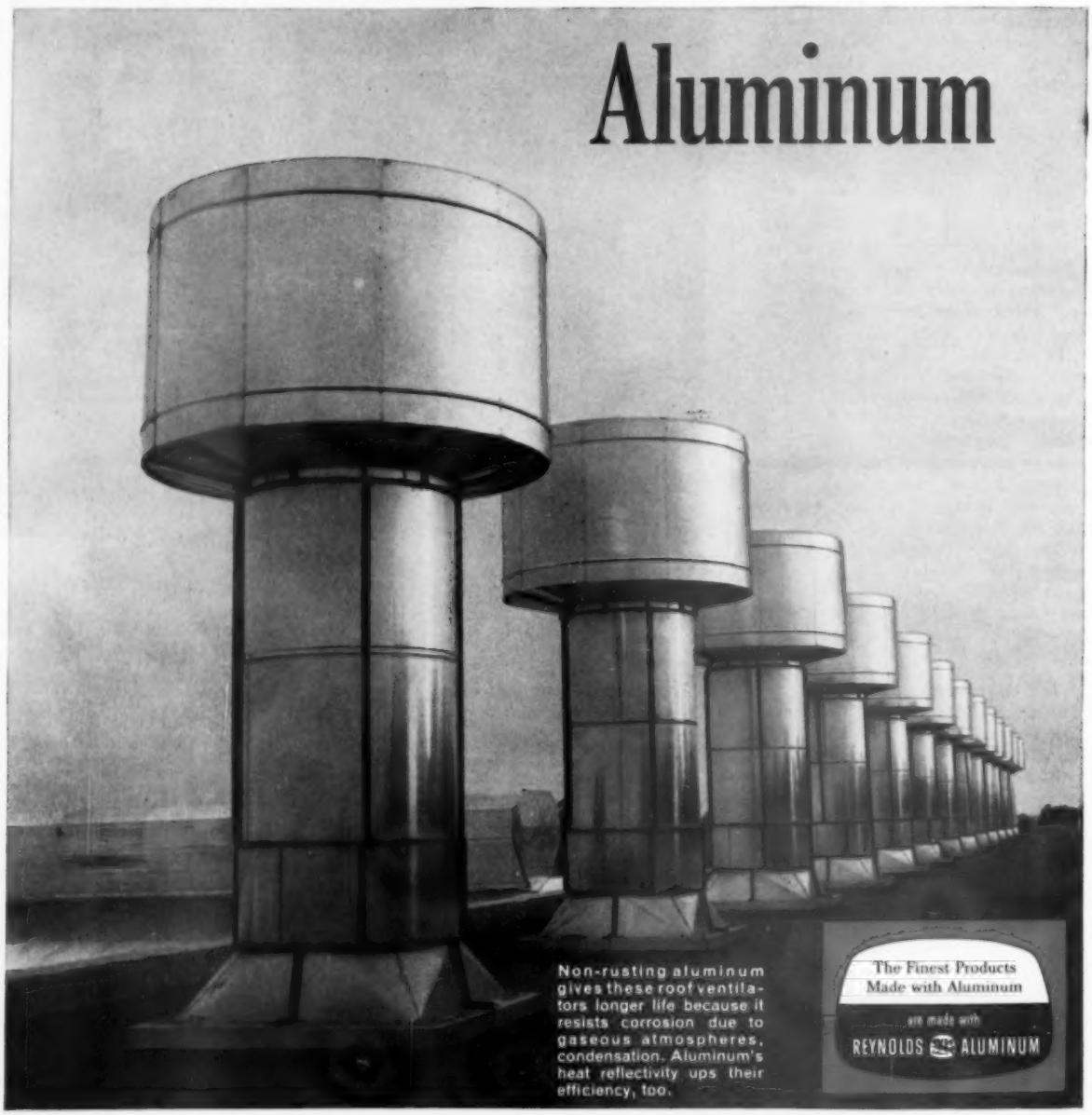
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Non-rusting aluminum gives these roof ventilators longer life because it resists corrosion due to gaseous atmospheres, condensation. Aluminum's heat reflectivity ups their efficiency, too.
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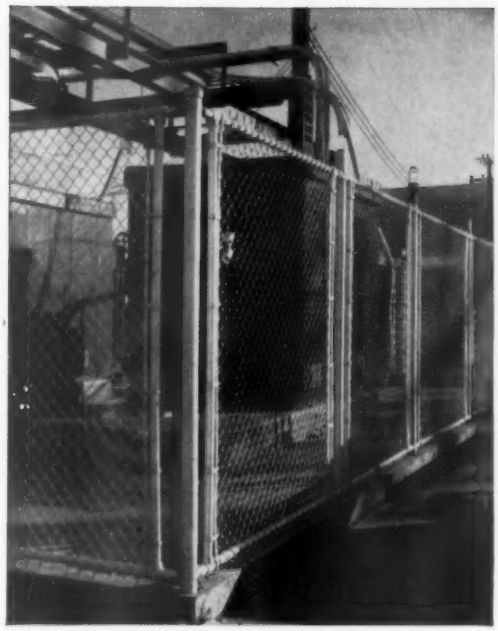
You can build low maintenance and lasting good looks right into a plant or equipment —by using strong, lightweight, rustfree aluminum in structural and building applications. Aluminum resists corrosion due to weather and gaseous atmospheres, so it needs little or no attention in a processing or refining plant installation. It can't rust ever, and it stays strong and new-looking, even in damp and corrosive places.

And maintenance costs aren't the only costs that can be lower, when you build with aluminum. Aluminum is the *lowest cost corrosion-resistant metal*, and its light weight (⅓ the weight of steel) can speed installation, cut building labor.

Thus, a catwalk using Reynolds Aluminum treadplate is not only maintenance-free —it often can be put up faster, at less cost than any other corrosion-resistant structure. Roof ventilators made with aluminum resist corrosion and won't rust—and, because of aluminum's heat reflectivity, are often more efficient. Aluminum chain link fencing never needs painting for protection, seldom needs maintenance of any kind.

Cost-cutting Reynolds Aluminum is finding its way into more and more applications in chemical and petroleum processing, not only in building and structural uses, but in piping, jacketing, heat exchangers, and other process equipment.

Before you plan your next installation, check *all* the costs, and learn how aluminum can save for you. For details, contact your local Reynolds office or write direct to *Reynolds Metals Company, P. O. Box 2346-CP, Richmond 18, Virginia.*



This fence will never need protective painting, seldom need any maintenance at all.

Upkeep on this stairway and conveyor is just about zero; aluminum stays bright and new looking, and it's non-sparking.

REYNOLDS ALUMINUM

Watch Reynolds TV show **"WALT DISNEY PRESENTS"** every week on **ABC-TV**

WELL-SERVICING UNITS at this Halliburton base in Venice, La., load and discharge bulk cement pneumatically, typifying how . . .

Bulk Deliveries Offshore Go Modern

Bulk handling of mud and cement by pneumatic methods is giving operators a bonus in savings and efficiency in the current offshore drilling upsurge.

Sack deliveries of these vital materials are still being made. But this practice is fast giving way to the speedier, cheaper method of bulk delivery, a relatively new trend that is fast becoming the standard operating procedure offshore.

One industry source estimates that a bulk pneumatic system as much as doubles the rate of delivery, at an approximate 75% saving in labor costs. Actually, there are no real limitations in this respect, other than economic, since such bulk pneumatic systems can be tailored to fit nearly any need, increasing the rate of delivery manyfold.

In sack delivery, a work crew of four to five men can transfer up to 20 tons of mud or cement to a platform in an hour—if weather conditions permit. The bulk systems now in use can top 40 tons an hour, with two-man crews, and in 12-ft. seas.

Several types of bulk systems are now available. But operating procedures and equipment have much in common.

Baroid Division of National Lead Co. uses a 6-in. type-H Fuller-Kinyon pump to move the dry, powdered mud from the delivery vessel through 150 ft. of 5-in.-diameter flexible hose to the rig platform.

Low-pressure, high-volume compressors also are key factors in these systems. In one Baroid system, the compressor has a capacity of 450 cu. ft. of air per minute, at 30 psi.

Halliburton Oil Well Cementing Co., which has developed several bulk handling systems for various purposes, uses compressors (supplied by several different companies) which develop around 40 psi. maximum, generally.

Halliburton also has developed combination cement- and mud-handling systems for use on offshore platforms. These systems are custom-made, depending on rig design, space availability, customer preference, and the like. The systems can be mounted on a single skid, or separately.

One installation, for Magnolia Petroleum Co., consists of two 820-cu.ft. pressurized storage "P tanks"—one for cement and one for mud (but they can be interchanged); two surge bins with dust collectors; one 30,000-lb. platform scale; and one Electric-Power compressor with capacity of 300 cu. ft. of air per minute.

The tanks are filled by pneumatic means from pressure vessels on a delivery boat.

Material is handled pneumatically throughout—from fill to discharge. Various bulk materials can be proportioned (cement and barite, or mud and barite, for instance) for any particular job by means of a scale on the tanks.

The pressure storage tanks can be used for any dry material. There is no contamination of drilling materials while they're being transferred. And during deep drilling, the mud storage tanks can be continuously pressurized.

Another new development in the bulk handling field is the "floating warehouse."

Baroid's Barge No. 126 (picture) is one of the newest of such units to go into service. It is designed to serve as a shore supply point location on navigable inland waters.

The unit, one of two built by Baroid in conjunction with Todd Shipyards, in Houston, has a total mud capacity of over 300 tons. It is 100 ft. long and 30 ft. wide, and has a 7-ft. loaded draft.

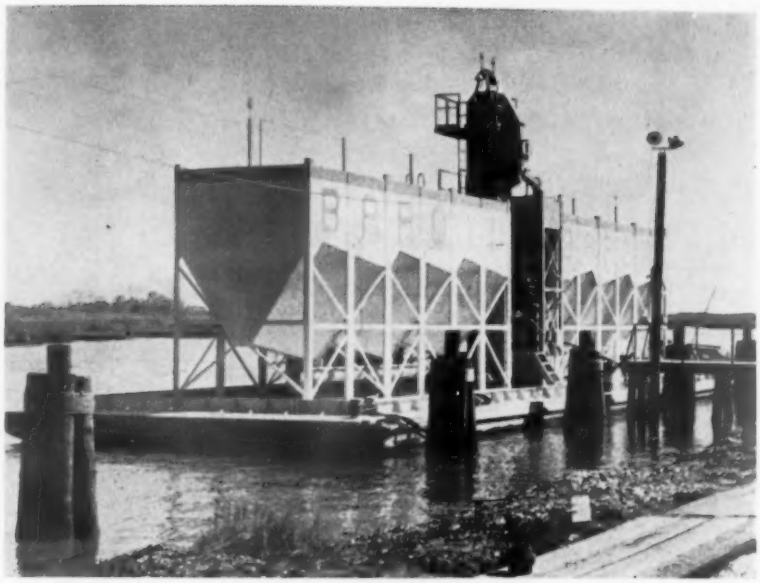
These warehouses are equipped to deliver dry, powdered material in small quantities to a cyclone-type separator for the filling of bulk cans, or in large quantities to vessels that deliver bulk mud to offshore drilling units.

The floating warehouses have six tanks, separated in the middle by weighing and delivery equipment.

Delivery from the floating warehouse is accomplished by discharging from the storage hoppers to a screw conveyor, which, in turn, delivers the material to a bucket elevator, and then, by a short length of Airslide conveyor, to a receiving hopper.

This hopper, empties through another short length of conveyor into a J-40 Richardson scale. The scale weighs out 1,000-lb. batches and dis-

AIRSLIDE CONVEYOR (center) carries bulk mud from silo to tanks on deck.



FLOATING WAREHOUSE, Baroid's Barge 126, serves as a shore supply point on navigable inland waters. Bulk mud can be conveyed pneumatically at up to 50 tons an hour.

THE C.T.8, operated by Bourg Mud & Chemical Co., pneumatically delivers barium sulfate in bulk to offshore rigs.

MUD IS DELIVERED directly into the hold of this drilling tender from bins on the C.T.8, a converted 122-ft. cargo ship.

charges by gravity directly into the receiving hopper of a Fuller-Kinyon pump driven by a GM 471 Diesel engine.

The pump, skid-mounted in the "hold" amidships, fluidizes the dry mud and pumps it through a 6-ft. length of 5-in.-diameter hose to a short length of fixed steel piping, which emerges on deck. Here the actual transport hose for conveying to the delivery vessel is attached.

When discharge is made into 5,000-lb.-capacity bulk cans, the flexible conveying line from the deck is attached to a cyclone, for deaerating the mud first.

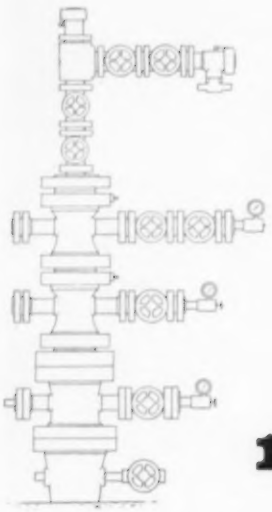
For delivery in bulk, to a bulk transport barge, the mud can be conveyed automatically by the pump at rates up to 50 tons an hour for distances up to 250 ft.

Halliburton uses a "mother barge" (picture) to help supply its well-servicing ships, equipped with P-tanks for pneumatic delivery to offshore locations.

Some of the bulk handling systems are finding their way into non-oil uses, thus opening a new market for equipment makers.

It's reported that several systems of this type have been sold or leased to various manufacturing plants outside the oil industry, including food-handling companies, which deal with bulk transfer of dry, powdered material.

These pneumatic systems offer the important advantage to such users of making bulk transfers without contaminating the material. This is particularly important to food processors.



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5. **Optional auxiliary secondary pack-off with organic packing "floating ring" seal.**
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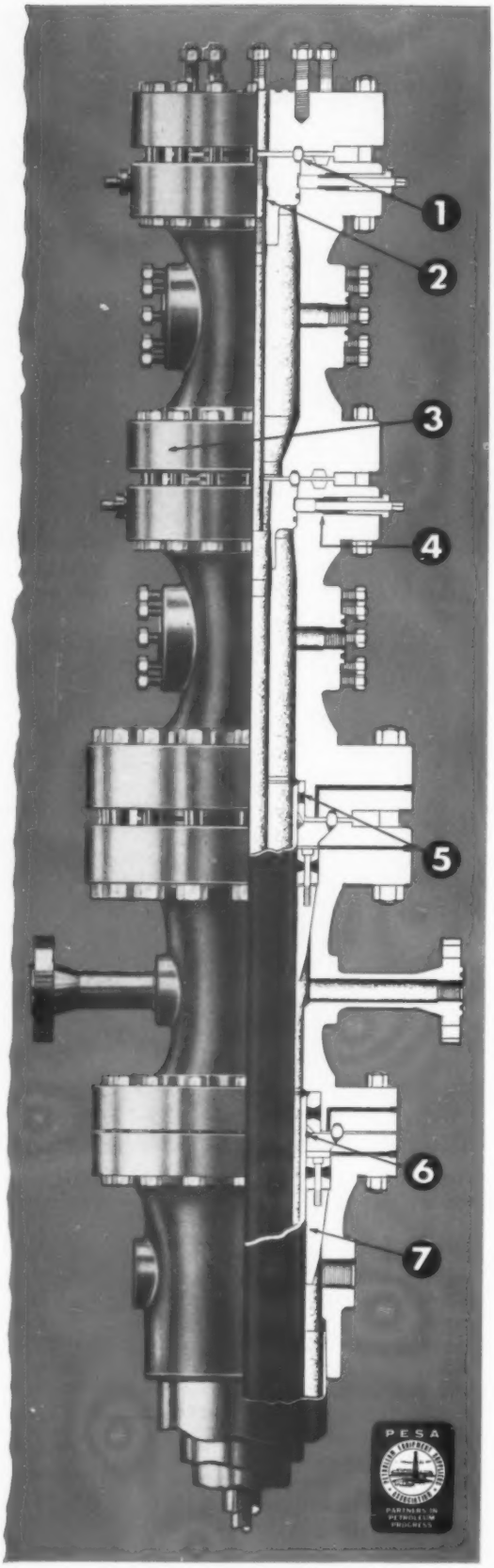
7. **"Balance slip" suspension with self-actuated sealing mechanism.**

MONOGRAMMED EQUIPMENT — CERTIFICATE NO. 2158

Be safe! Be sure! Buy Rector quality!
See your Rector representative or your favorite supply store.



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Oil Well Division of United States Steel Corp.

What's New / IN EXPLORATION, DRILLING, PRODUCTION

A study of wildcat drilling over a ten-year period shows that the country's oldest producing area—Pennsylvania, Ohio, Virginia, and West Virginia—leads in the percentage of successful wildcats.

The survey, made by Rycade Oil Corp., covers the years 1948-57 and is based on data from the Land Man's Yearbooks and the annual surveys of the American Assn. of Petroleum Geologists. All categories of wildcats listed by the A.A.P.G. were included.

Other states with better than the national average (15.75% in 1957) were New Mexico, Louisiana, Utah, Kansas, Oklahoma, and Texas.

Rycade notes that while the older producing states had the best wildcat success averages, it is presumed that "the reserves found by these successful wildcats are not large enough to cause any great activity."

•

The first exploratory drilling for oil in Puerto Rico will get under way in six months.

David L. Gordon, president of Maritime Oil Co., Houston, heads up a syndicate that will conduct exploration near Juan Diaz, on the territory's south coast. The site was picked on the basis of extensive geophysical data collected since June, 1958.

•

Los Angeles has adopted an ordinance establishing an oil-drilling policy on city-owned lands, including a requirement for sealed competitive bids on acreage to be leased.

Other provisions require the city to confer with oil experts before calling for bids for drilling on or under city-owned land; inclusion in bid specifications of one specified variable, such as bonus, royalty, or lease term; and at least 60 days between calling for bids and opening of bids, with major companies to be notified directly.

•

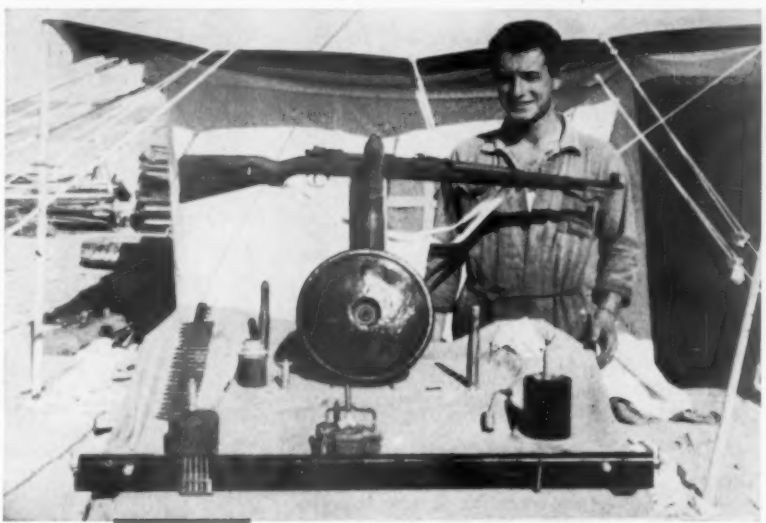
Construction has begun on $2-million worth of facilities to handle oil and gas production from a drilling platform 2 mi. off Santa Barbara, Calif.

Standard Oil Co. of California, Western Operations, Inc., says five coordinated construction jobs are involved, with completion scheduled in about four months. Standard and Humble Oil & Refining Co. completed the discovery at Summerland in November, 1958 (PW—Nov.28 '58,p14).

•

Hamer Corp., Midland, Tex., has dissolved its newly-acquired Coronet Oil Co. and sold 49 producing oil wells to Hall Brothers, Inc., of Abilene. Price was not given, but Hamer, a recently-formed holding company, paid Placer Development, Ltd., of Vancouver, $12,190,436 for all the assets of Coronet, a Placer subsidiary.

Most of the oil wells sold are in



Libyan Sands Yield Forgotten Arsenal

. . . to GSI crews in their search for oil

Before they can probe the subsurface for geophysical data, GSI field parties in Libya must probe the desert sands for dangerous remnants of World War II.

German Teller mines, British, French, and Italian bombs, artillery shells and other relics of desert fighting are turned up by GSI mine clearance parties in advance of geophysical exploration.

Uncovering and disarming anti-tank and personnel mines isn't usually considered part of a geophysicists' job, but, to get the data its client needs, GSI has taken mine clearance in its stride. GSI counts among its demolition experts former members of the British Eighth Army and Rommel's Afrika Corps . . . now working side by side to reap what they had sown nearly twenty years ago.

In all fields of exploration GSI has the experts and the facilities to get the job done the way it must be done.

GEOPHYSICAL SERVICE INC.
800 EXCHANGE BANK BUILDING • DALLAS 35, TEXAS

Charles G. Cooper, *Vice President,*
The Cooper-Bessemer Corporation, explains...

How Cooper-Bessemer can serve you anywhere in the world

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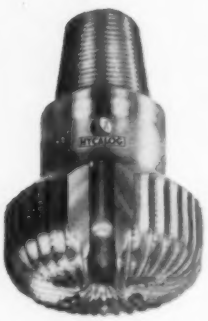
Processing fertilizer in India

Compressing gas in Near East

Oil refining
in Venezuela

Developed by Hycalog . . .

V-DOOR DRILL BITS PATENT PENDING CORE AND BUST TO ACHIEVE LONG UNINTERRUPTED RUNS

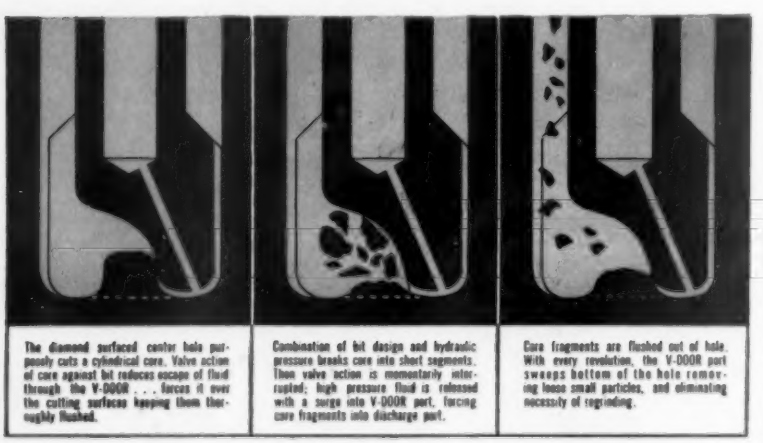


Diamond drill bits were formerly handicapped in duration of runs . . . *and rate of penetration* . . . by their inability to dispose of cores formed at their centers.

In shales and other soft formations, the core twisted off and rotated with the bit.

In hard sands the core crushed the center diamonds, preventing further drilling.

BUT HYCALOG'S ENGINEERS have turned these handicaps into an advantage. Now, the V-DOOR bit, developed by HYCALOG, utilizes *controlled failing* of cores to achieve a faster rate of penetration . . . *and longer life.* HERE'S HOW:



The diamond surfaced center hole purposely cuts a cylindrical core. Valve action of core against bit reduces escape of fluid through the V-DOOR . . . forces it over the cutting surfaces keeping them thoroughly flushed.

Combination of bit design and hydraulic pressure breaks core into short segments. Then valve action is momentarily interrupted; high pressure fluid is released with a surge into V-DOOR port, forcing core fragments into discharge port.

Core fragments are flushed out of hole. With every revolution, the V-DOOR port sweeps bottom of the hole removing loose small particles, and eliminating necessity of regrinding.

Ask your HYCALOG rep to show you some performance records on the V-DOOR. He has a stack of them. *And also get the facts on* HYCALOG *well logging.*

Hycalog, Inc.

505 AERO DRIVE

SHREVEPORT, LOUISIANA

BRANCH OFFICES IN PRINCIPAL OIL PRODUCING AREAS

DIAMOND CORING • DIAMOND BITS • WELL LOGGING • CORE ANALYSIS

Ector, Scurry, and Winkler Counties, West Texas. Hamer also sold an undisclosed amount of undeveloped acreage to Hall Brothers but retained other properties.

•

A unitized waterflood operation in the Senora sand zone of East Seminole pool, Seminole County, has been authorized by the Oklahoma Corporation Commission.

W. E. Stiles Engineering, Inc., Tulsa, will engineer, develop, and operate the 750-acre project.

•

Occidental Petroleum Corp. has merged with Gene Reid Drilling, Inc., of Bakersfield, Calif.

Gene Reid Drilling will continue under that name as a fully-owned subsidiary of Occidental. The merger was effected by a stock exchange.

•

Electrical Log Services, Inc., Dallas, has acquired Bess Mason Log Service, Austin.

Austin will continue as a division of Electrical Log and will expand its distribution to North and West Texas oil centers. Mrs. Bess Mason, who started her logging service in the 1920s, will continue with the Dallas firm as a consultant.

•

Stockholders of White Eagle Oil Co. have voted to change the corporate name to Helmerich & Payne, Inc., the name of the principal operating division of the company in recent years.

Effective date of the name change is Aug. 1. Operations will not be affected by the change.

•

Engineering

Up to 3,000 lb. of 13 different materials can be weighed automatically in fixed sequence every five minutes by a new proportioning system developed by Richardson Scale Co. Clifton, N.J. The scale, developed for proportioning various types of clay in connection with oil refining processes, can be readily adapted to other materials with similar characteristics.

•

Operators now can predict the probable production increase from a given acid treatment by using a new

PARKERSBURG PUTS SAFETY FIRST... WHERE SAFETY COUNTS!

ANOTHER PARKERSBURG OUTSTANDING ENGINEERING ACHIEVEMENT

Your field men are protected 3 important ways with Parkersburg Gear-Driven Pumping Units:

1 **PARKERSBURG CLAMSHELL BRAKES** have **greater grip** which means **more safety** for your field men! The brake shoes are equally spaced on either side of the drum giving **greater gripping** power.

2 **PARKERSBURG CLAMSHELL BRAKES** have **positive-lock** action which means **positive safety** for your field men. The brake is either **on** or **off** — there is no dangerous in-between. Snap-type leverage on the hand lever with bar, or rod-type linkage to the brake itself, prevents mishaps by eliminating slippage and stretch.

3 **PARKERSBURG CLAMSHELL BRAKES** put **safety first where safety counts!** The brake is **easy** and **safe** to operate because the brake lever and the engine clutch lever are conveniently located to each other—the operator is **never** off-balance when stopping or starting the pumping unit.

THE PARKERSBURG RIG & REEL CO. — PARKERSBURG, WEST VIRGINIA — QUALITY PARKERSBURG SERVICE — MADE IN U.S.A.

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THE PARKERSBURG RIG & REEL COMPANY
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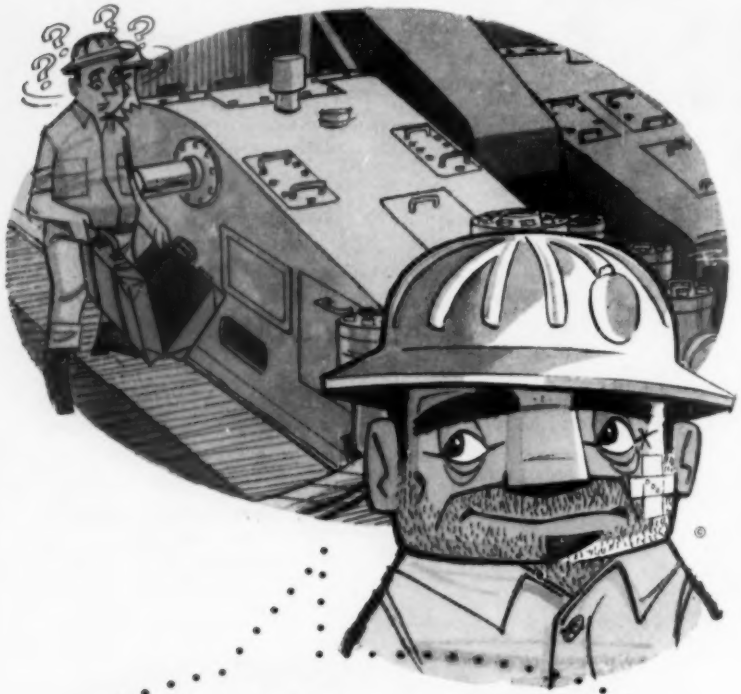
Parkersburg Pumping Units are available through the following supply stores: American Pipe & Supply Co., Beacon Supply Co., Bovaird Supply Co., Canadian Equipment Sales & Service Co., Ltd., C. W. Cotton Supply Co., Franklin Pipe & Supply, Ltd., Franklin Supply Co., Houston Oilfield Material Co., Inc., Industrial Supply Co., Iverson Supply Co., Midland Supply Co., Inc., Mountain Iron and Supply Co., Murray-Brooks, Inc., Oil Equipment, Ltd., The Producers Supply & Tool Co., Republic Supply Co., Rodman Supply Co., Superior Iron Works & Supply Co., United Supply & Manufacturing Co., Wilson Supply Co.

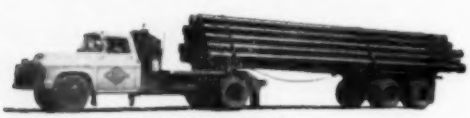
Congrats and $25 for this quip to M. H. Barber, Continental Oil Co., Big Spring, Texas.



"told him to pack the pump"

Whether it's running casing for surface hole, intermediate string, oil string or tubing . . . Lone Star Steel pipe is the brand Joe Roughneck counts on. Centrally located in the heart of the Mid-Continent oil producing area, Lone Star delivers API electric-weld casing, tubing and line-pipe on the double . . . in quantity! And, you can depend on Lone Star for quality as well as quantity. Our ultra-modern steel mill is equipped with the newest, most efficient tools in the industry. Rigid quality control is maintained from ore to finished product.

Neighbor, wherever you are, specify Lone Star and we both get a good deal.



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"Acid Guide" developed by Dowell Division of Dow Chemical Co.

The guide, similar in scope to the company's recent "Frac Guide" (PW—Mar.13'59,p21), also predicts the advisability of an acid treatment for a specific well, on the basis of sound engineering principles rather than trial and error.

The "Acid Guide" provides a technique for balancing the kind and volume of acid against the injection rate to secure optimum penetration into the reservoir. The guide is based on a series of curves derived from a detailed study of thousands of acid treatments made on many different kinds of wells, and in many reservoirs.

•

A new 24-channel, transistorized sesimac system that is complete in two compact, lightweight units has been introduced by Southwestern Industrial Electronics Co., one of the Dresser Industries.

The two units of SIE's PMR-20 Portable FM Magnetic Recording System are made up of the 50-lb. MR-20 transport, and the 40-lb. MU-20 Master Unit. The transport houses the recording drum, drive system, and fixed or movable recording heads. The Master Unit contains the modulators, domodulators, and auxiliary electronics.

•

Drilling Highlights

East Texas—W. R. Hughey No. 1 F. D. Connell, Joseph Ferguson survey, Limestone County, dual gas-condensate discovery, was completed for 37-million cf/d through perforations at 6,692-98 ft., 6,723-26 ft., and 6,730-36 ft. in the Rodessa, with 53.2-gravity condensate at the rate of 28 bbl. per million. The well also flowed 2,450,000 cf/d of gas plus 17 bbl. of 58-gravity condensate per million through perforations at 7,256-66 ft. and 7,272-76 ft. in the Pettit. The new area, 4 mi. southwest of Oletha field, has been designated Southwest Oletha field.

South Dakota—Shell Oil Co. No. 1 Tilus, section 11-20n-4e, Harding County, was completed on the pump for 11 b/d of oil and 109 b/d of water through perforations at 8,365-67 ft. in the Red River (Ordovician). The wildcat is more than 2 mi. southeast of a 2-mi. southeast extension to Buffalo field drilled earlier this year by Shell (PW—Jun.19'59,p29).

West Texas—Sinclair Oil & Gas Corp. No. 2-B Iowa Trust, section 17,

block 10, H&GN survey, Pecos County, flowed 129 b/d of 39.2-gravity oil through ¼-in. choke and perforations at 5,792-814 ft. The Devonion discovery is 1 mi. southeast of the recently-opened South Santa Rosa Fusselman gas pool.

New Mexico—Gordon M. Cone No. 1 Gormon-State, section 36-18s-24e, Eddy County, was completed as a Wolfcamp discovery to flow 54 b/d of 44.5-gravity oil through 10/64-in. choke and perforations at 5,641-53 ft. The well is 6 mi. southwest of Lakewood pool.

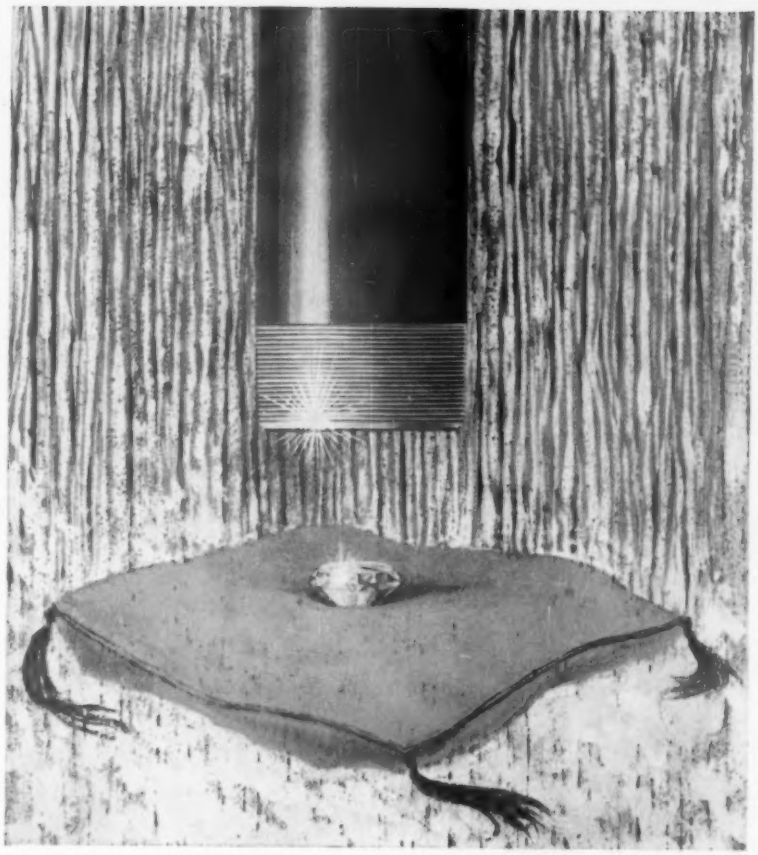
Oklahoma—Pan American Petroleum Corp. No. 1 Phillips, section 15-24n-24w, Ellis County, flowed 5 bbl. of 40-gravity oil in 18 hours through ¼-in. choke, plus 1,470,000 cf/d of gas, on test of the Tonkawa (Pennsylvanian) at 5,835-39 ft. The prospect also flowed 1.3-million cf/d of gas through perforations at 7,653-57 ft. in the Morrow (Pennsylvanian). The wildcat is 3 mi. northwest of the one-well North Salon field.

West Central Texas—Burt Drilling Co. No. 1 Sam Seay, H. A. Thompson survey, Runnels County, was completed for 350 b/d of 41-gravity oil through ¾-in. choke and perforations at 4,987-92 ft. in the upper Gardner (Pennsylvanian). The pool opener is 3½ mi. south of Ft. Chadbourne field.

Wyoming—Gulf Oil Corp. No. 2 Federal-State Line Unit, section 18-12n-94w, Sweetwater County, recovered 2,529 ft. of gassy 39.8-gravity oil on 2-hour drillstem test of the Fort Union at 3,814-75 ft. The prospect had flowed gas at the rate of 5,208,000 cf/d on an earlier test. The wildcat is 4 mi. southwest of Gulf's No. 1 Unit, which was abandoned at 7,600 ft.

North Texas—Bayview Oil Corp. and Exploration Surveys, Inc., No. 1 H. C. Gilmore, George Dedrick survey, Jack County, flowed at the rate of 33 bbl. of 43-gravity oil per hour on 8-hour test through 14/64-in. choke and perforations at 4,588-611 ft. in the Mississippian. The discovery is 3 mi. south of Alco field.

Nebraska—Nebraska Drillers and J. A. Terteling & Sons No. 1-B Olsen, section 17-18n-56w, Banner County, was completed on the pump for 178 b/d of oil through D sand perforations at 6,358-63 ft. and 6,365-68 ft. The discovery, named Nebril field, is situated 1 mi. west of the Petroleum field.



GEM
OF THE
OIL AND GAS
INDUSTRY

The jeweler, in showing a fine stone, often displays it on a velvet cushion so that its true brilliance and beauty of cut will be most apparent to the viewer.

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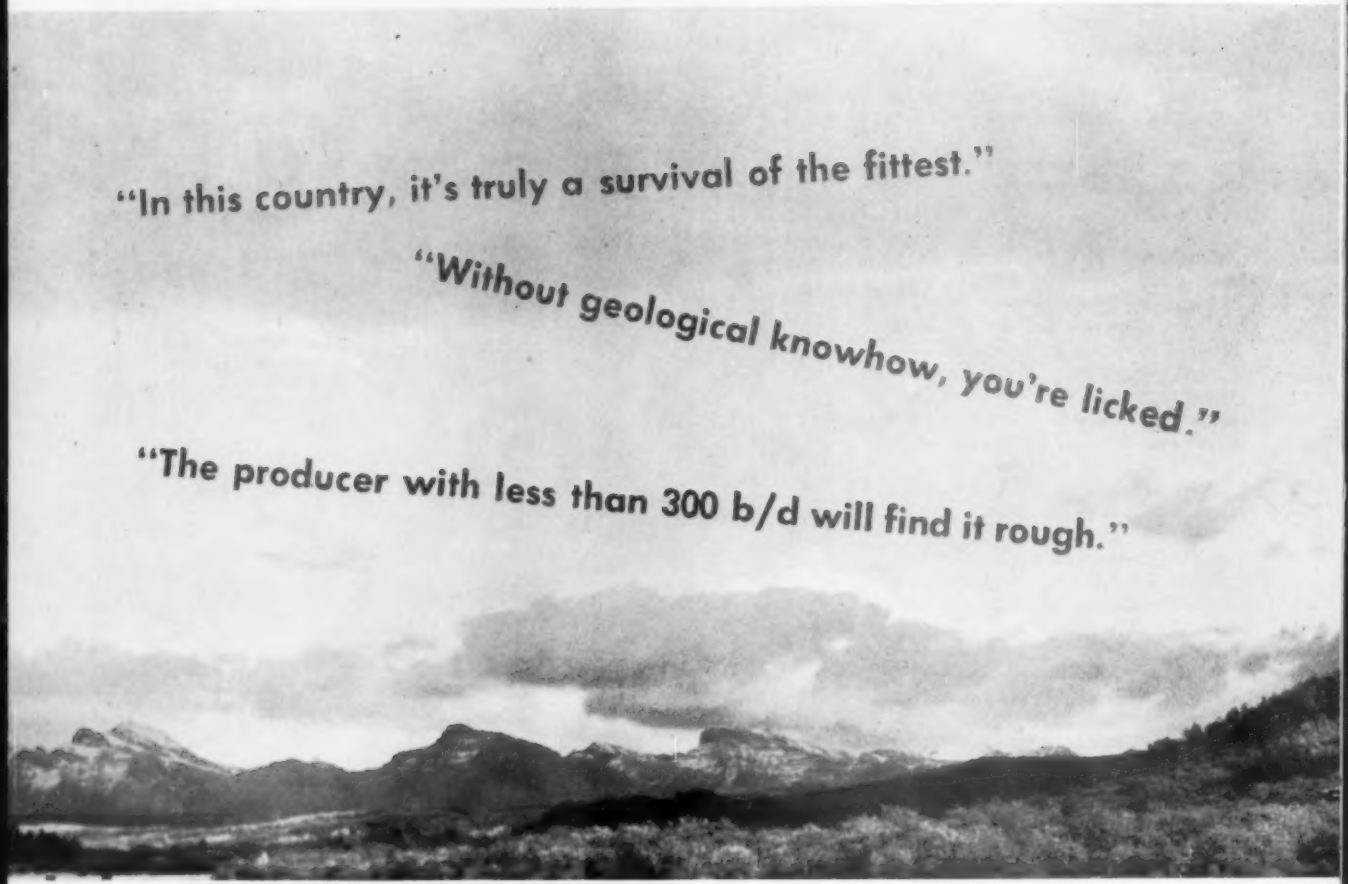

"In this country, it's truly a survival of the fittest."
"Without geological knowhow, you're licked."
"The producer with less than 300 b/d will find it rough."

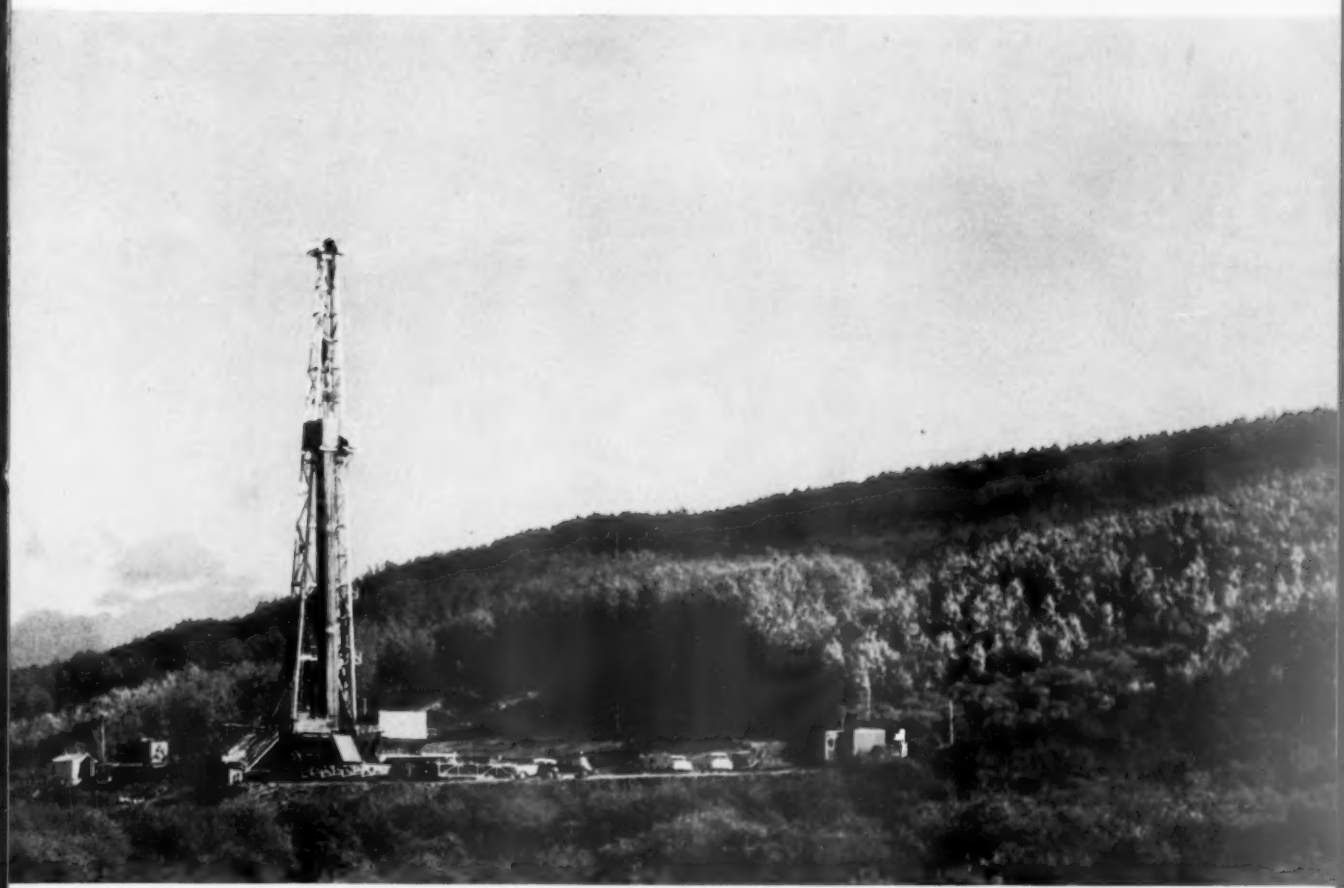
The Independents Grow Tougher

Weaker firms are being weeded out by tight markets, rising costs, financing woes. But a bright future awaits the survivors.

A tough breed of well-heeled independent is being developed north of the border, one that will be in the thick of the Canadian oil hunt for a long time to come. Evidence is apparent in such deals as last month's $3½-million farmout by Canada Southern Petroleum, Magellan Petroleum, and Oil Investments of exploration rights to 1.2-million acres in the Trout Lake area of the Northwest Territories. A group of companies (Home Oil, Signal Oil & Gas, Kern County Land, Alminex, and United Oils) will invest at least $3-million in drilling five wells to earn a 50% interest in the property.

Developing the financing and knowhow to make such frontier exploration possible hasn't come easy. "In this country, it's truly a survival of the fittest," says a Calgary independent, whose firm has emerged from a bewildering series of 20 mergers and acquisitions.

The operators still going strong are predominantly Canadian, with a liberal sprinkling of American, English, and others. Language peculiarities are now well-mixed (an Englishman in Calgary refers to "cotton pickin' wells"). Generally in their 40s and 50s, the independents frequently have had experience with big oil companies in many places around the world. Most have university de-



in CANADA

grees. Some are lawyers, doctors, and businessmen in other lines who ventured into oil.

These independents are doing almost half the wildcatting in Canada. According to data compiled by a group of producers, the independents drilled more than 45% of the new-field wildcats in Western Canada during the nine-year period, 1949 through 1957. And they maintained this rate last year by drilling 360 of 780 new-field wildcats.

The independents are even more aggressive in developing the country's oil discoveries. They are participating in the drilling of well over half of Canada's development wells. Rough calculations by the producer group, based on Canadian Petroleum Assn. data for 1958, show that the independents participated in 1,000 of the 1,700 development wells drilled in Western Canada in 1958. (However, by retaining only part interest in their wells, independents are believed to have realized production of only about 140,000 b/d, compared with a total average Canadian crude production of 453,514 b/d last year).

As of midyear, 1959, the Canadian Assn. of Oilwell Drilling Contractors reports, 35 of the 139 active rigs in Canada were contracted for by independents.

A simple explanation for the high degree of capability of many of today's operators is that the weaker firms have gone under. The pitfalls have been lack of cash, lack of land, lack of competent management, failure to get good advice, and emphasis on stock market performance.

The greatest numbers of producers came into being following the Leduc strike in 1947. The peak was reached in 1952, when 345 companies were formed in Alberta alone. From that time on, there has been a steady decline in the formation of new independents. And almost without exception, the death rate has risen each year.

It is now estimated that more than 2,200 companies have dropped out of sight as functioning producers during the post-Leduc period (of which mergers accounted for some 11%).

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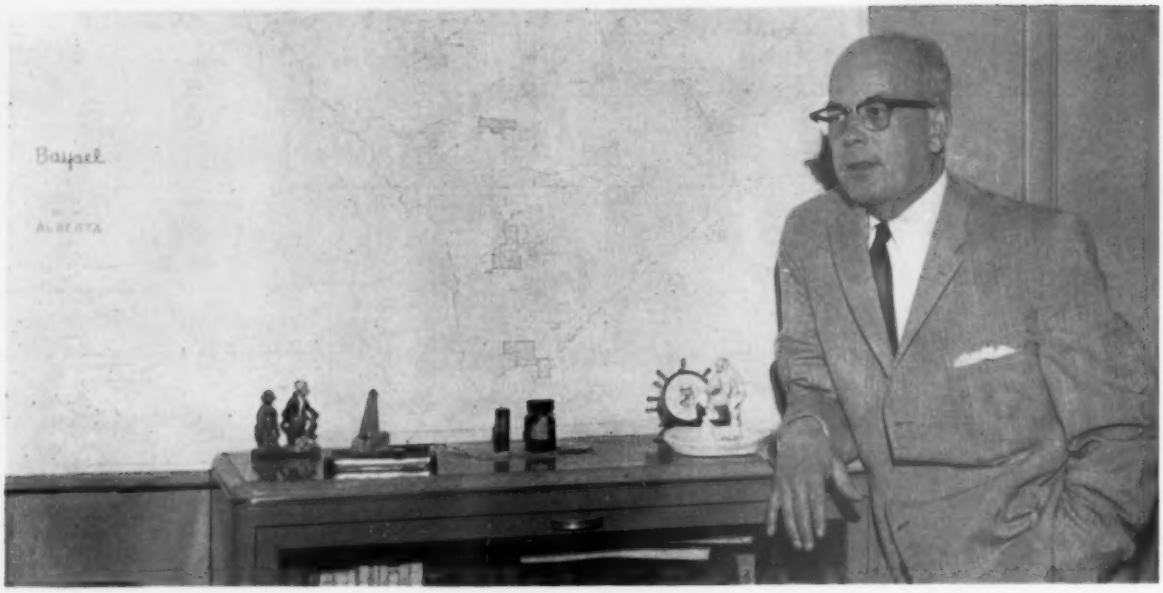
THE FUTURE OF THE INDEPENDENT PRODUCERS IN CANADA



A. G. BAILEY, vice-president and general manager, Bailey Selburn Oil & Gas Ltd.

"It takes both money and land to keep the independent operator alive . . .

No official statistics are available in complete form that offer an accurate breakdown for the producers, however, partly because of divided opinions on which firms should rightfully be classified as independents.

The attrition is pointed up by the fact that only about 350 independents appear in general listings of oil companies in Canada—and fewer than 100 of these can be considered significant and active producing companies. The birth-death ratio, however, is looking a bit better, now that demand for Canadian oil is improving, both at home and in the U.S.

With more rough days still to come, company size is becoming a vital factor. Says an oil veteran in Calgary, "Today you'll have trouble without a good land-spread. And the producer with less than 300 b/d will find it rough."

Observes Charles S. Lee, president of Western Decalta Petroleum Ltd., Calgary, "Size is of greatest importance, since a company can withstand more effectively sudden drops in prices or allowables if it has large and widely distributed sources of revenue from various productive areas. Only size can give you a better chance to spread risks."

Today, it is not unusual for an independent to have interests in two or three million acres of minerals rights, or to control wide areas of undrilled frontier land, as a land-holding operation, awaiting the right deal.

Almost all the producers agree that shortage of markets is by far the most important problem confronting them, despite the fact that oil economists are now predicting Canadian crude production will continue to rebound this year and top the 1957 level of 500,000 b/d. What causes the problem is that Canadian producibility

. . . The day is gone for staying in the game with a few quarter-sections, a government reservation, and an interest in one well. Companies that played it that way are either dying or being absorbed. Some working on that scale were just speculators; the chips are now too big for them. But if you have enough land and money, the future looks very, very good in Canada."

is estimated at more than 1-million b/d. The unproductive investment in oil wells in Western Canada is $650-million to $700-million.

"What really hurts," says one operator, "is that Canada's wells are capable of supplying all of Canada's requirements of some 690,000 b/d of crude, yet actually are supplying little more than half."

It is small consolation to the independents to hear forecasts setting exports of Canadian crude to the U.S. by 1980 at 1,600,000 b/d. They are not built to wait long for income from their reserves.

Says Walton H. Hohag, Jr., president of Banff Oil Ltd., Calgary, "The worldwide surplus of crude production capacity and cheap tanker rates are hurting us. Being far from the coast, we can't enjoy a great export trade. The independent's destiny is bound up with supplying his own country. But in Montreal, for example, we meet a flood of foreign oil." (Imports of crude to Canada from the

continued ▸

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On the next pages:
SPANG Extreme Line Tubing

Why SPANG Extreme Line Tubing is best for deep, high pressure wells

Name the tubing features you need for profitable completions in deep, high pressure wells—and you'll find that Spang Extreme Line Tubing has every one! Take make-up and running speed, for example. Wide, rugged, modified Acme threads provide fast joint make-up with minimum possibility of cross threading and maximum speed in running. Couplings are eliminated, and the integral type joint of Spang Extreme Line reduces threaded connections 50%.

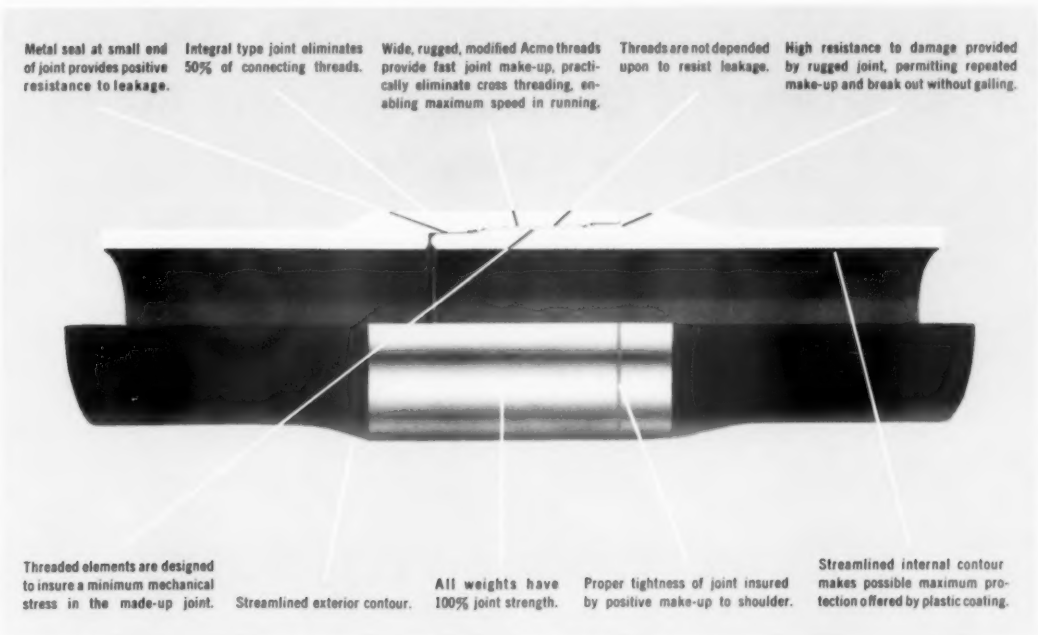
Need 100% leakage resistance? You get it with Spang. Male and female members make up into a sealed joint that is shoulder tight, and this unique seal resists leakage even under extreme conditions. The Spang Extreme Line joint is streamlined internally and externally with a minimum outside diameter.

Because of its streamlined exterior, Spang Extreme Line greatly minimizes the possibility of hanging up when running or stripping under pressure. The joint strength is 100% in all weights—its ruggedness permits repeated making up and breaking out without galling.

Spang Extreme Line Tubing is available in grades J-55, N-80, and P-105 to meet every well condition, and—if you anticipate paraffin accumulation or corrosion problems—you can order Spang's plastic coating to combat it (more about this on the next page). Spang Extreme Line Tubing is especially suited for deep, high pressure wells.

Next time you need tubing, be sure you get the best. Buy Spang Extreme Line Tubing or Spangseal Tubing.

Couplings are eliminated in this superior, 100% leak-resistant joint!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Proper tightness of joint insured by positive make-up to shoulder.
Streamlined internal contour makes possible maximum protection offered by plastic coating.

On the next page: New SPANG Red Plastic Coating for Tubing!

The joint design of Spang Extreme Line Tubing insures fast make-up, with minimum possibility of cross threading and maximum speed in running. Joint strength is 100% in all weights.

The new red plastic coating is approximately half as thick as the familiar green which has been used successfully for a number of years. National has the only mill facility of its kind for the unified control of tubular goods and plastic coating.

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Like the thoroughly proven GREEN coating, the new RED coating is applied to a shot-blasted surface by alternate spraying and baking until the lining of predetermined thickness is obtained. The result is a hard, smooth lining which effectively resists paraffin deposition. (Field experience shows SPANG Plastic Coated Tubing eliminates 50% to 75% of the costly paraffin removal jobs required when uncoated tubing is used.)

We will continue to supply the GREEN coating. It costs more, but it's still the best investment for severe corrosive conditions. To give special protection to the joint sealing area in Spang Extreme Line Tubing, a Teflon corrosion barrier sealing ring is used. This ring completely closes the space between the end of the male member and the inner shoulder at the depth of the female member of the joint. The National Representative in your area can furnish full details.

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Near and Middle East, Venezuela, and Trinidad are currently running about 325,000 b/d.)

The independents are being hurt more than the majors by market restrictions, because their operations usually are confined to Canada, and often to one locality. Comments Western Decalta's Lee, "Major international integrated companies can always rely on other sources of revenue that are not open to independents. But any reduction in revenue immediately cuts into an independent's ability to expand in exploration or development. Speaking very roughly, a 20% reduction in revenues can result in a 50% reduction in the exploratory effort."

Little or no hope is held that the June 1 exemption from U.S. import controls of overland oil shipments from Canada will do much good, except possibly long-term. R. A. Brown, Jr., president of Home Oil Co. Ltd., recently went so far as to say, "This is a gesture on the part of the United States to remove minor irritations between our two countries. But it will mean little in the way of solving our immediate oil marketing problem. . . We are fully aware of the commercial preference of the international oil companies."

"It seems unlikely," says Banff Oil's Hohag, "that any group of refiners in the U.S. will sign up for more long-term supplies of Canadian crude. There are too many homeless tankers looking for places to discharge their oil. The Trans-Mountain pipeline to the West Coast is running far under capacity, because the refiners in the Puget Sound area can get cheaper oil, their own oil, by tanker."

The independents generally feel that the maximum shipments of Canadian crude exported to the U.S. Puget Sound area, despite recent increases, will not exceed 70,000 b/d. During the Suez crisis, such deliveries approached 100,000 b/d.

And the independents doubt that there will be much expansion of the present 70,000 b/d flow of Canadian crude into the U.S. Upper Midwest.

Independent opinion is split over the much-discussed pipeline to carry Alberta crude to the Montreal refining area.

Some call it the answer to foreign competition, insisting Canada should be supplied by Canadian oil. Others say the U.S. imports relaxation has lessened the pressure for such a line. They also feel that a better solution would be to gain greater access to Canadian markets by utilizing existing facilities to the maximum extent possible.

"While a pipeline to Montreal was being built over a two- or three-year period," says one independent, "a surplus of producing capacity again would be built up because of the heightened incentive for drilling."

Shut-in natural gas capacity isn't improving the producers' plight. There are more than 800 capped gas wells in Alberta alone. This is an unproductive investment of about $150-million. "A company may limp on the sale of oil," says one producer, "but make up for that on the sale of gas and other liquids. This has been denied us."

However, there is optimism that new gas markets will open up in the U.S. and at home next year. This hinges on approval by federal governments in both countries. Canadian government approval is required for Trans-Canada Pipe Lines' increased requests—already approved by Alberta's government—for more gas for Canadians. Applications of Westcoast Transmission Co. Ltd., Alberta & Southern Gas Co. Ltd., and Midwestern Gas Transmission for increased sales to U.S. Pacific Coast and Midwest markets require approval of both countries.

"We are looking at November of 1960," says one operator, "as the earliest possible date for additional export, provided that everything happens in the most favorable way."

The Canadian independents share the uneasiness of producers throughout the world over crude prices, although the gas price picture is somewhat brighter. To remain competitive in the face of the global trend downward, the Canadian industry was forced to make wellhead price cuts of 14¢ to 17¢ a barrel in Western Canada

continued ▸

W. H. HOHAG, Jr., president, Banff Oil Ltd.

"Find oil where you can sell it . . .

. . . No company is so small that it can't align itself with world oil economics to cure its problems. Today this simply calls for finding oil where we can sell it on an equal footing—and that's the tidewater line, near the coast. We have acquired land along the shore of the Arctic Ocean and on the Alaska peninsula, and are thinking of exploring for and producing oil in Western Europe. We must have the ability to move crude to markets. We can't wait 20 years to sell our oil."

early this year, and also to reduce pipeline tariffs. Offsetting reduced income from oil, however, is the fact that gas prices are considered good, and are expected to get better.

The producers feel their future would be brighter if the tax laws were changed to encourage more Canadian venture capital on a long-term basis. To supplement equity capital and short-term bank loans, the chief means of financing in Canada, producers often turn to individuals or corporations in the U.S. for long-term loans. Under U.S. tax law (but not under Canada's), private sources whose principal business is not production, refining, or marketing of oil are allowed to deduct their expenditures in searching for oil in computing taxable income. The independents feel that the potential investor in Canada should have an equal opportunity to supply risk money.

They also feel something should be done about what they believe are short-sighted policies in figuring percentage depletion, and in granting bank loans. In Canada, the producer must write off exploration and development expenses before arriving at the figures on which percentage depletion is calculated. Once substantial production is reached, every extra dollar spent on exploration and development serves to reduce the depletion deduction.

There is a widespread wish for some kind of lending beyond the normal banking arrangements that would help the independent over the tight-market period. The oil operators term the normal five-year production loan period of Canadian banks unrealistically low, especially when related to the long payout periods caused by reduced oil allowables.

All of these problems are compounded by the rising costs of labor and materials in Canada. Says a typical, medium-sized independent in Calgary, "In the years 1954 through 1956, our average net per barrel produced was $2 (wellhead price less wellhead lifting cost). In 1957, the net per barrel declined to $1.90, and by 1958 it was down to $1.60. These declines were the result of increased operating costs and the erosion of the crude price structure. I can't see any full-scale relief just now. Through an intensive development drilling program in 1958 we managed to keep our oil production approximately at 1957 figures, but oil income was down due to rising production costs."

The operators are finding field unitization some help in trimming costs. "You save on operating costs and district expense," says an Alberta producer, "and oil recovery is better because of more efficient technical operation. Automation is also helping. But there's really no way to duck the continually rising costs of doing business in the oil fields."

The going has been so rough at home that some independents are looking beyond their own borders. One group is in the Alaskan oil play. Some have operations in the U.S. Half a dozen are operating in Venezuela, jointly with large U.S. companies. One Canadian operator is operating in Indonesia, several are in North Africa, several in the Middle East, and one is in Australia.

Banff Oil's Hohag explains it this way: "We are examining the possibilities of entering Western Europe with a program to explore for, and produce, indigenous oil and gas in that oil- and gas-deficient area. In life there are two courses. One is to sit and suffer, and the other is to get out and do something. Instead of just battling the Canadian home economics, we're going farther afield into the world picture. If the home economics improve, so much the better—that's gravy."

C. S. LEE, president, Western Decalta Petroleum Ltd.

"Production revenue comes first . . .

. . . Each year, as oil is produced from the ground, sufficient revenue should be set aside to replenish the reserves that have been produced. This can be done either through the purchase of developed crude underground, the purchase of proven properties for development, or a stroke of good fortune arising from successful exploration. Any excess revenue may then be used for more speculative ventures without harming the basic resources of the company."

For the majority staying at home, the great risks in Canadian exploration are demanding a pooling of resources. Mergers are still common.

Says Edward A. Galvin, president and general manager of Medallion Petroleums Ltd., Calgary: "The need to join hands is a matter of necessity if you are to carry on exploration. And you must do this if you expect to stay in the producing business and grow."

Today almost no operator can exist without engaging in some form of joint venture, farmout program, management agreement, or other means of hedging the risk.

continued ▶

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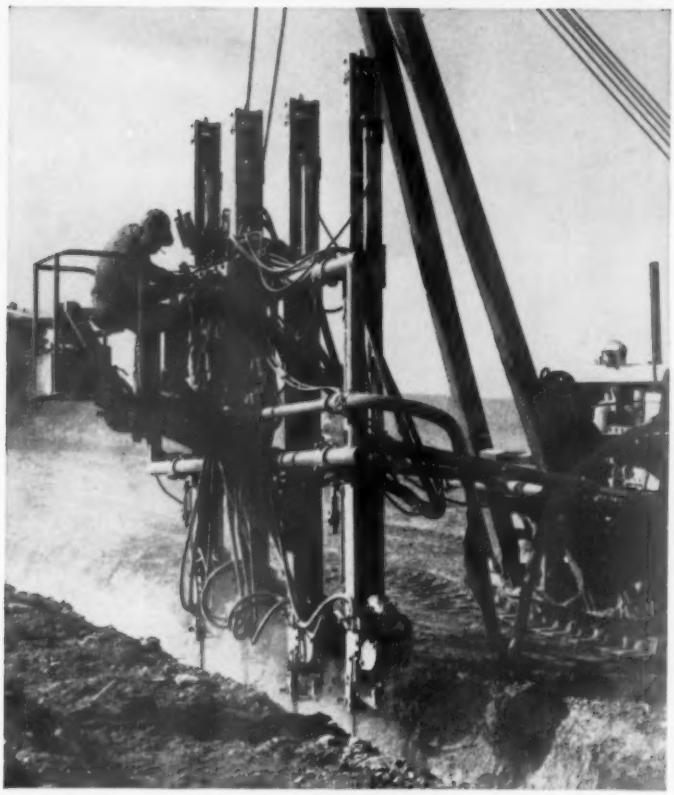

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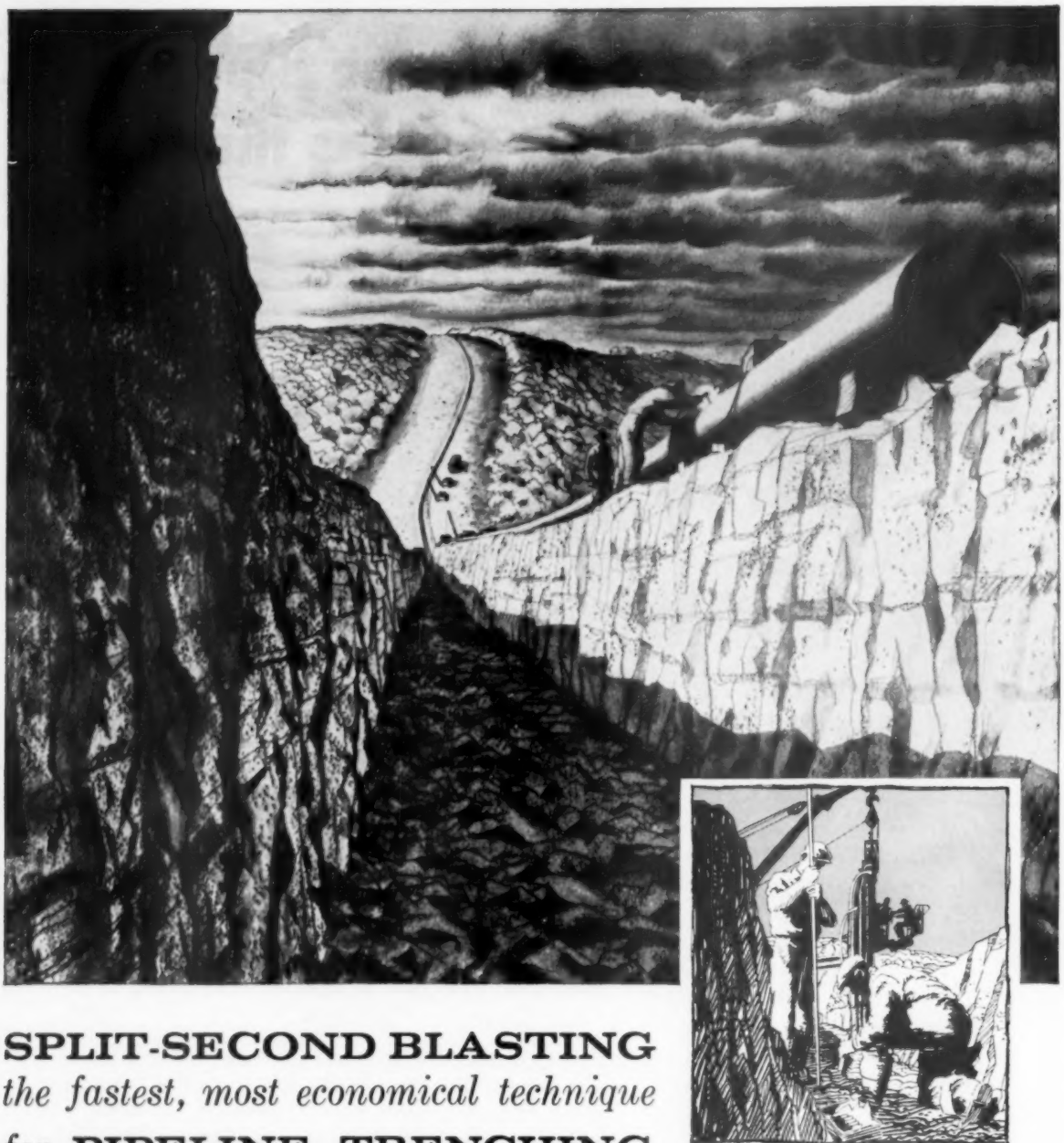

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Some of the independents feel they can continue indefinitely their success in following the land play and acquiring acreage ahead of the majors—then farming it out.

Observes Western Decalta's Lee, "We like to take up large acreage blocks in areas of potential interest as determined by our geologists. It's easy to negotiate with anyone when large blocks are involved. We have three or four partners in almost every deal. And we haven't neglected forward planning. For example, to get a foothold in long-term developments, we acquired a substantial interest in a million acres in the Mackenzie River Basin of the Northwest Territories."

Adds Alexander G. Bailey, vice-president and general manager of Bailey Selburn Oil & Gas Ltd., Calgary: "We have entered into farmout agreements with various other companies which will result in the drilling of at least a dozen wells on, or adjacent to, the company's holdings, at little or no cost to Bailey Selburn. We expect a total of 30 exploratory and 10 development wells will be drilled on our properties this year."

Keeping many dozens of small operators alive are the now-common management agreements which place the administration of a group of smaller firms under one stronger independent. There is no set formula, but usually such agreements involve complementary properties. Often a moderate-sized independent can handle the properties of small operators because the properties fit in with its own, and no additional personnel are required. By charging a monthly fee, the company providing the management gets a helpful cash flow. The firms being managed gain valuable oil field experience for a minimum overhead.

"Without geological knowhow," says an Alberta operator, "you're licked."

The problems of markets and costs will force most independents to continue to spend their exploration money in areas where the odds are the lowest—across northeastern British Columbia, Alberta, and southern Saskatchewan. This is where the most geological data is available, where costs are the lowest, where there is a reasonable chance of selling the oil that is found, and where there are enough neighbors with reserves to justify building a pipeline.

Balancing the good against the bad, there is a lot more optimism than pessimism among the independents. Speaking for most is the operator who says, "We started with one ridiculous little well in 1952, and now have 2,200 b/d production. It can be done by others."

Adds Medallion Petroleums' Galvin, "Despite today's world oil picture and our own proven locations in Saskatchewan that we can't afford to produce, we are so optimistic about the great opportunities we have in Canada that we are stepping up exploration to find more oil. This is an era of growth."

E. A. GALVIN, president, Medallion Petroleums Ltd.

"The risk has to be spread . . .

. . . The production of oil and gas from our properties is not concentrated or confined to any one region. Thus, adverse developments in one area can be taken in stride. Also we have found that land accumulated through merger usually provides a more selective land spread than the average."

Many eyes are on the years 1962 and 1963. "That," says Galvin, "may be a particularly interesting time, and not only because oil demand should be better. It is then that many freehold leases on a ten-year basis will be running out. There could be a lot of drilling and development activity and resultant reshuffling of land. It should be a very busy time for independents."

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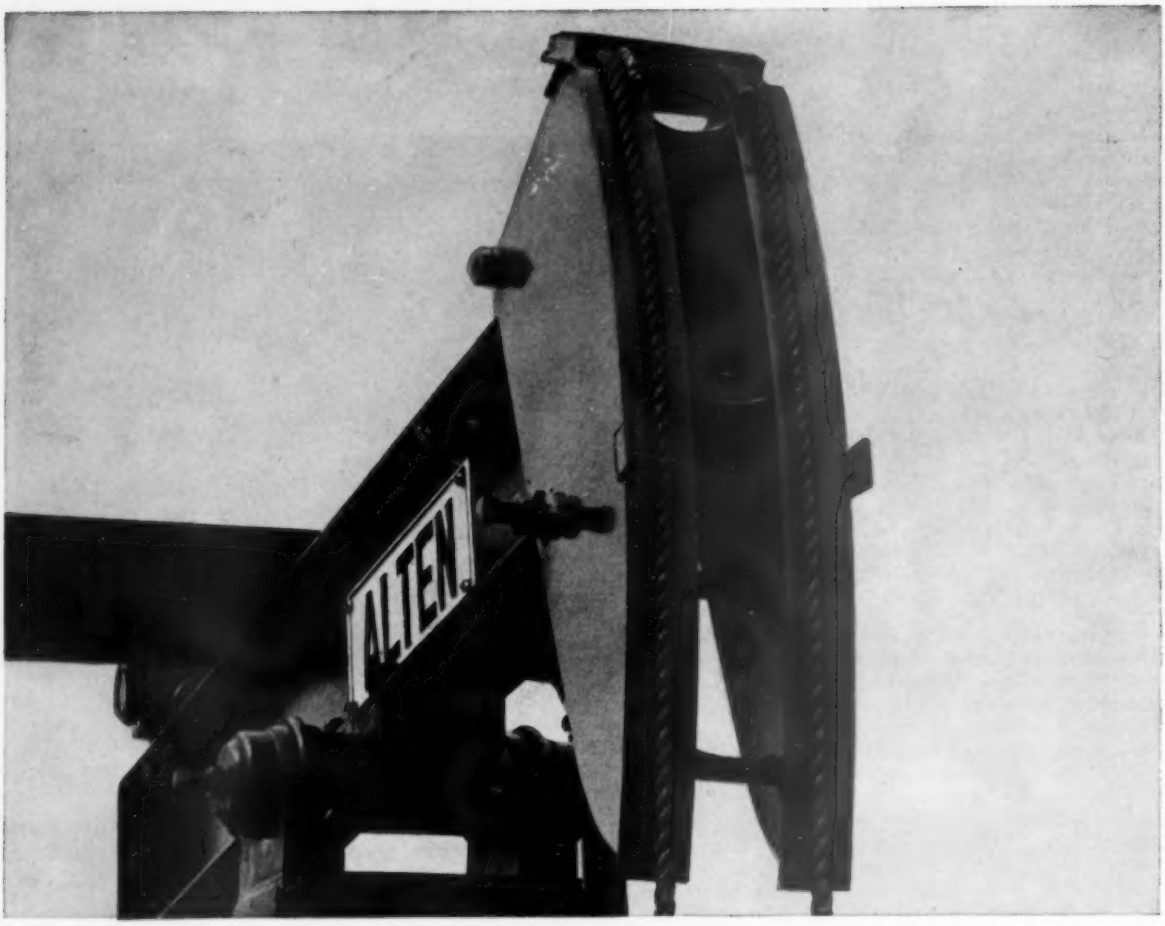

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Kaneb Uses Markets as Collateral

A 168-mi. extension of Kaneb Pipe Line Co.'s Kansas-Nebraska products pipeline—the first such line ever to be built and operated without throughput agreements—will be delivering to new, northern markets on that basis this fall.

Kaneb's original line, built in 1953 to tie refineries in the Wichita (Kan.) area with upstate and Nebraska markets, is believed to be the first to be constructed and operated without a single throughput agreement.

Kaneb's president, Herbert E. Fisher, told PETROLEUM WEEK last week that a high degree of success in the methods used in financing and operating the existing system—plus new markets—prompted the expansion.

The new line, slated to be in operation by September, will link Fairmont, Neb., and Yankton, S. D. At Fairmont it will connect with a lateral, scheduled to open within a few days, running from Phillipsburg, Neb. (map).

The longer, main pipeline will be used to move products beyond Kaneb's present Fairmont terminal to newly developed markets in northern Nebraska and South Dakota, while the 111-mi. lateral will feed the terminal from the Cooperative Refinery Assn.'s refinery at Phillipsburg.

At the present time, over 500 distributors in Nebraska alone are getting the bulk of their gasoline and other tractor fuels from the terminal.

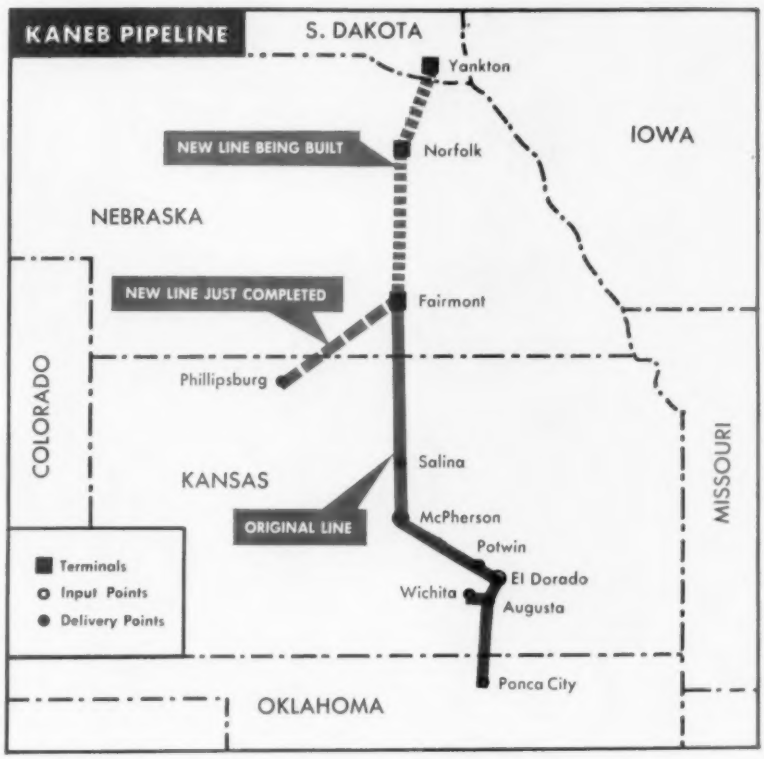
And completion of the extension will more than double the area which can be served by companies now using Kaneb's system.

Pipeline Technologists, Inc., of Houston, is responsible for all engineering and purchasing, and for supervising the construction, which is being done by Williams Bros., of Tulsa.

Raising construction money for the original 246-mi. system of 8-in. and 10-in. lines was a feat accomplished only after problems wholly new in products pipeline construction had been overcome.

The biggest obstacle in the path of the line was a natural reluctance on the part of potential backers to invest in a venture which had no written guarantee of success.

In the company's favor, however, was the fact that in the market it had staked out—a rich, agricultural one—deliveries weren't subject to the whim of seasonal factors. When demand for gasoline and other farm machinery fuels slipped, the weather usually was cold enough to push demand for heating fuels up.



Kaneb first showed prospective lenders the existence of a lucrative market.

Pipeline Technologists, Inc., was retained, says Fisher, to conduct "an exhaustive feasibility survey."

The survey showed a great farm demand for products—chiefly fuels—and the lack of a transportation system adequate to supply it.

Next, Kaneb had to show that the refineries had sufficient output to keep shipments at a profitable level.

This task apparently posed no special difficulties, since the refineries that would use the line all had appreciable outputs. Now directly connected to the line are Mobil Oil Co., American Petrofina, Inc., Skelly Oil Co., Vickers Petroleum Co., Derby Refining Co., Anderson- Prichard Oil Corp., and the National Cooperative Refinery Assn.

At the initial stage of negotiations, however, no refinery would commit any part of its output to the line.

And all those approached, according to Fisher, said only that they would use it "if service were acceptable and rates competitive."

Thus, armed only with an attractive picture of a potentially profitable market, but with no agreements in hand, Kaneb still was able to get private capital to construct its pipeline.

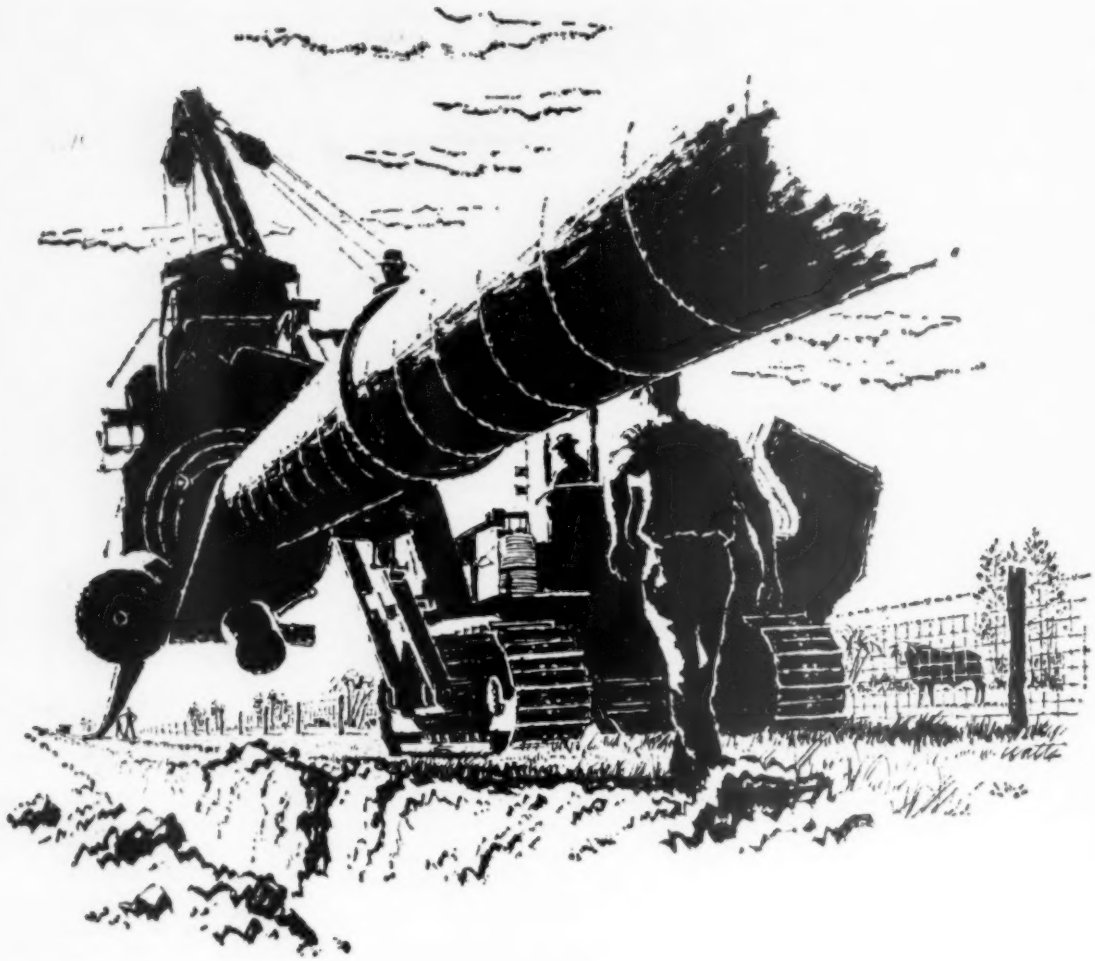
Financing was handled by a "large Wall St. banking firm," according to Fisher, in the following manner: About $6-million in first-mortgage pipeline bonds were sold to an insurance firm; equity capital was provided by private investors, including universities and individuals; and the remaining $2.7-million needed was raised through private placement.

Once the line was built, however, Kaneb faced other problems, all of which were solved.

Refinery shipments were low at the beginning. To boost them, the company launched "an aggressive sales campaign." Even sales representatives were employed, a move new in products pipeline operation.

To accommodate refiners, the com-

It takes many steps . . .



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pany adopted a policy of delivering quantities even as small as 2,000 b/d.

Another concession Kaneb had to make was to gear pipeline movements to the truckers' convenience rather than to its own.

It also will blend additives into products at the terminals for customers.

And, of course, at the same time, rates have had to be kept competitive.

Kaneb is confident that the extension will be as profitable as the original line, and is handling financing of the new facilities in the same manner.

Fisher says the current construction program will be paid for with $7.5-million from first-mortgage bonds, and $3.3-million raised from the sale of debentures and common stock, all of which was privately placed.

The only difference between the financing of the two projects is that the lateral from Phillipsburg is being built on the basis of a throughput agreement with the Cooperative Refinery Assn.

In addition to the extension and lateral, facilities will include new pumping stations at Phillipsburg and Fairmont, plus a public terminal at Norfolk, Neb., and another at Yankton.

While the new lines will double Kaneb's mileage, Fisher says that the system's ultimate capacity of 50,000 b/d will still obtain.

"The program is successful as evidenced by the expansion and now-widely-distributed common stock ownership," Fisher says.

"Our earnings in recent years have been maintained and increased in a most satisfactory manner," he adds.

Much of the success of the original line is attributed by the company to agreements concluded, after it was completed to supply two Air Force bases.

Fisher says Kaneb was the first products pipeline firm ever to connect its line directly with such a base. The two bases being supplied are Schilling, in Salina, Kan., and McConnell, in Wichita.

"We wanted throughput so we expanded a market for the refiners who had previously served the Air Force bases by transport and rail," according to Fisher.

Under Air Force direction, he says, the company was the first to store jet fuel in washed-out salt domes. The primary advantage claimed for this move is that it allows the refiner to produce jet fuel during seasons of the year when demand for other products is low.

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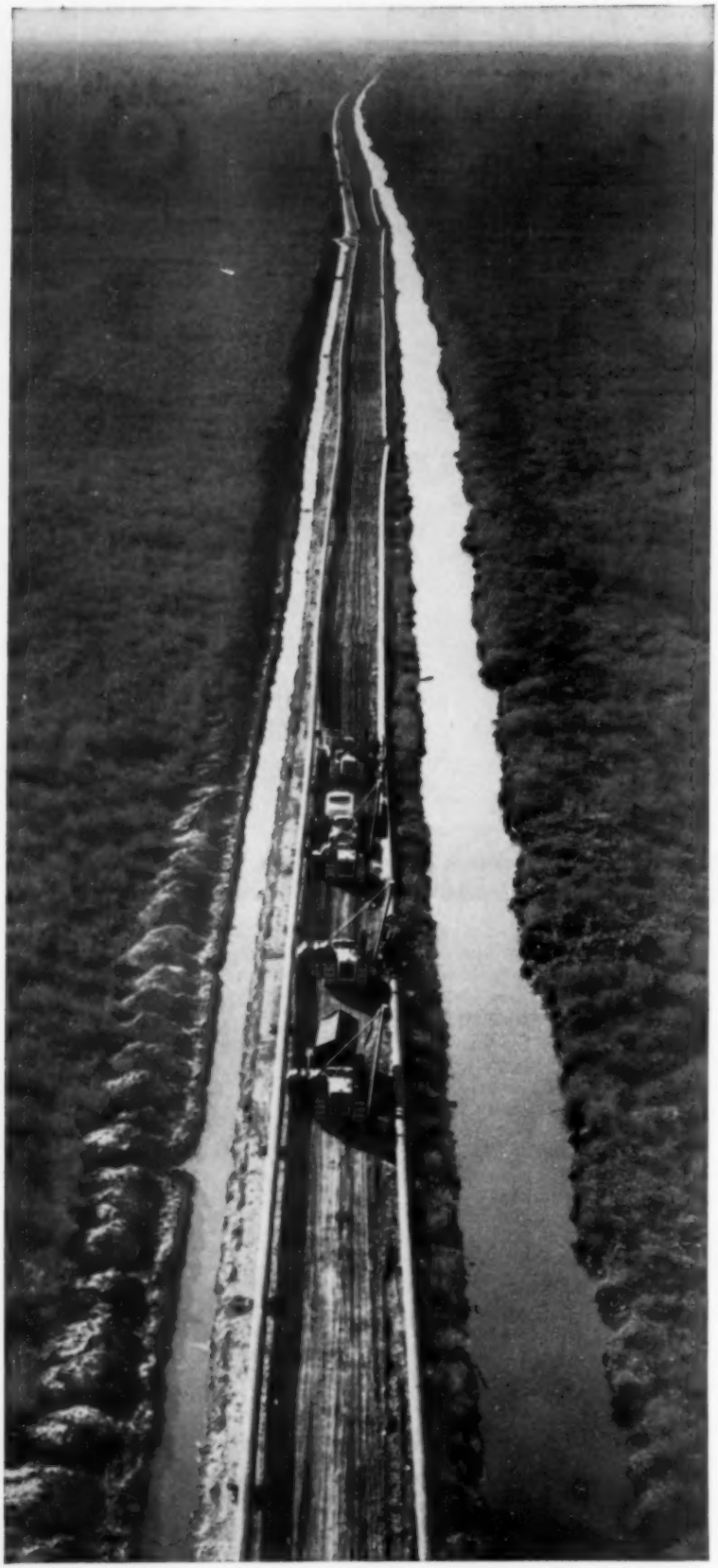

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What's New / IN TRANSPORTATION AND STORAGE

Final oral arguments on Transwestern Pipeline Co.'s proposed 1,800-mi. natural gas pipeline from West Texas to California were held last week before the Federal Power Commission.

Some 15 natural gas producers joined Transwestern in urging that the $191-million line be granted a certificate of public convenience and necessity.

If approved, the line would supply 300-million cf/d of gas to Pacific Lighting Gas Supply Co. and other Southern California companies (PW—Jul.10'59,p19).

•

A butadiene storage terminal is being built for Texas Butadiene & Chemical Corp. at Channelview, Tex., which will increase the company's butadiene storage facilities to the largest in the world.

The terminal, which is slated for completion in October, will consist of two 40,000-bbl. ellipsoids, each with a 4,000-ton capacity. The refrigerated units will be supplied through an 11-mi. line from TB&C's Channelview plant, for loading on ocean-going ships, tank trucks, and tank cars.

Builder is Hess Terminal Corp., which will operate the terminal.

•

The world's first "protected" supertanker terminal has been opened in Los Angeles harbor.

Buffered from pounding seas by a breakwater, the 18-acre terminal is able to handle tankers up to 75,000 tons coming into its 46-ft. channel. The channel can later be deepened to 55 ft. to take even bigger tankers, if that's found necessary.

Push-button controls at the terminal enable one man to unload 35,000 bbl. of crude an hour. Other statistics: Channel width is 500 ft.; storage capacity is 875,000 bbl.

•

Natural Gas Pipeline of America has been granted a rate increase amounting to $1,335,700 a year by the Federal Power Commission.

•

An electronic device giving instantaneous warning of gas formation on tankers has been successfully tested on the turbo-tanker Andrea Costa, an Italian vessel.

The instrument signals the exact location of the gas to a panel on the bridge.

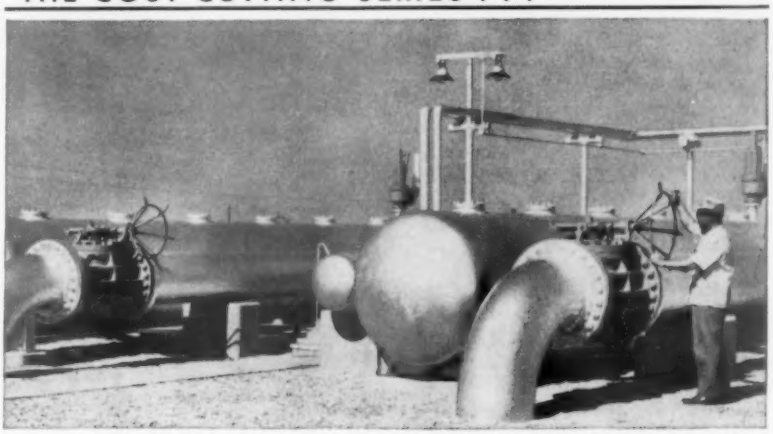
•

Kockum Shipyard, Inc., Sweden, will build two 77,000-ton tankers for Standard Oil Co. (N.J.) for delivery in 1962 and 1963.

Kockum says the two vessels will be the largest tankers ever built in Europe.

The present record is held by Swedish Uddevalla shipyard, which last February launched a 68,000-ton tanker.

THE COST CUTTING SERIES . . .



LUBRICATED PLUG VALVES close faster, tighter

Rockwell-Nordstrom lubricated plug valves, especially larger sizes, operate many times faster than other valves. The 30″ valves shown above will close in minutes (not hours) yet shut-off bubble tight. Since a 90° turn of the plug stops flow and lubrication reduces torque, closure is naturally faster and easier than non-lubricated valves. Lubrication also assures positive shut-off by creating double pressure seals at each plug port opening.

Additional benefits of lubrication include prevention of metal-to-metal wearing friction which cuts downtime and repair costs. For details *on the complete line* of Rockwell-Nordstrom lubricated valves, write: Rockwell Manufacturing Company, Pittsburgh 8, Pa. Canadian Valve Licensee: Peacock Brothers Limited.

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Experience Solves Fluid Coke Problems

The use of fluid petroleum coke from Tidewater Oil Co. as fuel for the three steam boilers of Delaware Power & Light Co. has brought up many unexpected problems, which are slowly, but steadily, being solved.

When the utility company undertook to use as fuel any product that the refinery across the street had available (PW—Jun.5'59,p44), neither party to the agreement knew what it was letting itself in for. Today, after nearly three years of operation, things appear to be straightening themselves out.

The first major problem was one of equipment erosion as the fluid coke was being transferred pneumatically from the refinery to the power plant.

Fluid coke resembles dark grey sand. It is very hard—its Hardgrove index is 17—and extremely abrasive. To make things even more difficult, large particles, about pea-size, often appear in it unexpectedly.

As an average of 800 tons per day are transferred daily from the coker in the refinery to the storage bin on the roof of the power plant, special means had to be devised to minimize the wear, and avoid shutdowns.

The coke is "activated" at the refinery. This means that it is put in a sort of emulsion with air. From the activator, the emulsion is blown over to the power plant through three 5-in. overhead pipes, and delivered into a huge storage bin.

Although great care was taken to use large radii for all the bends in these pipes, the wear was terrific. Some sections had to be replaced every 250 tons, the utility reports. Special metals were tried, but to no avail.

At present, all bends have been replaced by Y's with one branch blanked off. Thus, the coke fills up the dead-end branch of the Y, and wear on metal is prevented. These Y's are made of cast Nihard, a metal supplied by United Conveyor Corp.; they are made in two bolted sections, for more economical, easier replacement.

Where the stream of coke reaches the storage bin, the flow has now been directed downward, so that the incoming coke is blown onto the pile of coke already in storage, instead of being blown against the metal wall of the bin.

These changes have reduced the erosion substantially.

PULVERIZED FLUID COKE, gas, and, on some occasions, fuel oil from the Tidewater Oil Co. refinery, are fed together through a special combination burner into the huge combustion chambers of Delaware Power & Light Co.'s steam boilers.

The second problem was how to separate the air from the air-coke emulsion.

Once the fluidized, activated, coke has reached the storage bin, the air that was used to bring it there must be let out. It is heavily laden with coke dust, and must be cleaned before it can be released to the atmosphere. A bag-type Sly dust separator is now being used.

Dacron bags were used initially; these were next replaced with cotton bags. Neither was satisfactory, so Orlon bags were tried. These seem to give satisfactory results, from the standpoints of both dust retention and resistance to wear.

These bags are shaken vigorously for 1½ minutes every half-hour; small hammers hit the walls of the bins receiving the dust from the bag separator every few seconds to keep the dust from adhering to them. This is all done automatically.

The condition of the bags must be frequently checked, lest unsightly clouds of dust come out through the vent.

The pulverization of the fluid coke, in three Riley Atritor impact-and-attrition pulverizers, appears to have given no special trouble.

The fluid coke, which comes from the refinery at a fineness of 90% through a 50-mesh screen, is pulverized to a fineness of 70% through a 200-mesh screen.

The tungsten carbide lining on the attrition elements must be carefully checked at frequent intervals; if one of these linings fails, its cast iron support disappears almost at once, as it cannot resist the abrasion of pulverized petroleum coke.

Surprisingly, with a fuel heavily laden with sulfur and vanadium, no slagging or corrosion difficulties have been experienced in the boilers, the superheaters, the air heaters, or the stack.

This can be attributed to several ingenious details in the design and the operation of the installation. For example:

- The superheater elements in the Riley boilers are all suspended outside of the flame travel, thus eliminating a frequent cause of corrosion of superheater hangers.
- There are no economizers—a frequent cause of corrosion.
- The flue gases are kept at a high temperature—400F to 450F—well above the dew point, to avoid condensation.
- The Ljungstrom air preheaters have special Corten corrosion-resistant steel baskets.
- The air reaching the preheaters has already been preheated to 200F on steam coils.
- The unburned coke dust, separated from the flue gas, is returned to the pulverizers. It is constantly handled at high temperature, to avoid any condensation.
- The Pratt-Daniels tubular mechanical dust separator is cleaned with hot air while in operation, as soon as a buildup of the draft loss indicates that it is beginning to get plugged.

Soot blowers in the superheater section of the boilers are operated once a week.

"We do this on general principle," says Bob Weimer, the utility plant's superintendent, "but there is really no need for it. One boiler has been operating for 15 months without any cleaning."

Automatic controls maintain the over-all efficiency of the boiler installation at 87%.

This is very good, Tidewater and the utility agree, considering that a great variety of fuels, gaseous, liquid, or pulverized, in changing proportions, are being delivered from the refinery. Readjustments of combustion conditions must be done constantly.

Cat Cracker FOR CANADA

CB&I's Chicago plant fabricated the components for this UOP catalytic cracking unit installed at a Canadian refinery. Included were the reactor-regenerator, stripper, catalyst hoppers and riser pipe. Erection at Regina, Saskatchewan, was handled by Horton Steel Works Limited, Toronto, Ontario, a subsidiary of CB&I.

This cat cracker is an example of *CB&I Craftsmanship in Steel*, demonstrating the ability of CB&I to coordinate engineering, fabrication and erection facilities to provide structures which meet the most exacting specifications.

It will pay you to learn how CB&I's *coordinated services* can give you better performance and longer effective service life for tanks, towers, vessels and special processing equipment. These *coordinated services* are available to you on a worldwide basis. For further information, write our nearest office.

● Cat cracker fabricated by CB&I and erected by Horton Steel Works Limited, Canadian subsidiary.

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P85CB

A look at today . . . and a glimpse

Armour Chemicals for refinery applications

Where they work today

Every major phase of the refining operation can profitably use one or more of Armour's economical, cationic chemicals. Here are three typical applications for these chemicals: *hydrochloric acid inhibition, fuel oil additives* and *cationic asphalt emulsions.* We suggest you look into Armour's aliphatic organic compounds and see how they can work for you.

HCl Corrosion Inhibition

Armour Chemical announces a new corrosion inhibitor for hydrochloric acid—Armohib® 28.

This fatty-nitrogen-derived chemical is of particular interest to refiners for use during refinery clean-ups. It inhibits the HCl from attacking and pitting metal surfaces, yet it *does not* interfere with the cleaning action of HCl in removing scale or fouling deposits in processing equipment and boiler feed waters.

Armohib 28 has been proved effective in 5%, 10%, and 15% HCl solutions at temperatures ranging from ambient to over 200°F. It is non-staining, will not deposit a waxy surface on treated metal, and leaves surfaces bright and clean.

Tentative specifications

Activity	100%
Equivalents per gram (as titratable amine)	.00155
Flash Point	90° F
Pour Point	60°F
Solubility	
in HCl	Soluble
in water	Dispersible
in mineral oil	Soluble to 50%
in fuel oil	Soluble to 50%
Specific gravity	0.939
Physical appearance @ 25°C	Dark brown liquid

Armohib 28 effectively controls corrosion on 316 stainless steel, monel, bronze, and mild steel. It will not precipitate in the presence of ferric ions.

As little as 0.08% of the inhibitor in 10% HCl at 120°F has been proved effective, with the treated metal (mild steel) showing a weight loss of only 0.00470 lbs/ft²/day.

If HCl corrosion, pitting and/or foaming is your problem, investigate Armohib 28.

For more information, and test results, check "A" in coupon.

Fuel oil additives

One of the country's largest refiners recently evaluated a variety of organic compounds as fuel oil dispersant additives. Armour's cationic chemicals were found to be the most economical and effective sludge dispersants of all the additives tested.

The test consisted of circulating fuel oil containing a weighed amount of sludge through a fuel burner pump with a 100-mesh monel strainer. Comparative results were as follows:

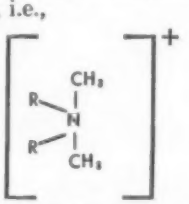
Typical Comparison Tests

	Chemical X (dispersant type additive)	Arquad 2HT	Arquad 2S plus Armolad F25
Cost/bbl.	1.0¢	0.6¢	0.8¢
Concentration	100 ppm	50 ppm	25-50 ppm
% Dispersibility	78%	94%	96%

Of all the different compounds tested, Armour's Arquads® (quaternary ammonium chlorides) were the most effective dispersants. Screen deposits in the test fuel oil/water system were reduced by 94%.

When the Arquads were combined with the Armolads®—Armour's series of inhibitor-dispersant type fuel oil additives—there was a noticeable increase of dispersing properties. Even with low concentrations of Arquads, the mixture was highly effective.

It is hypothesized that the cationic portion of the chemical mixture, i.e.,



combines with the insoluble gum or sludge to form a finely dispersed complex which allows the fuel to be cleanly burned.

These tests are of special significance to companies that store fuel oil for long durations in warm weather. In addition, these findings will help companies that mix different fuel oils in storage tanks, or that face

# of tomorrow

from Armour Chemical

the possibility of home consumers mixing different blends of #2 fuels.

Check "B" in coupon for detailed information on this test.

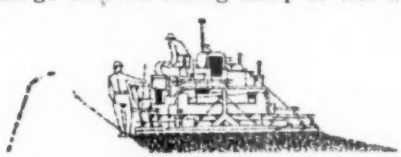
Cationic asphalt emulsions

Armour's high molecular weight amines have been proved highly effective for cationic asphalt emulsions.

These chemicals are ionized in solution and produce positively-charged asphalt particles. Since most surfaces are negatively-charged, the asphalt, when emulsified with Armour cationic amines, will deposit completely and irreversibly on almost any metal or mineral surface.

Research by Armour, several leading universities, and asphalt producers shows these new cationic asphalt emulsions to have several distinct advantages:

- They can be used in economical concentrations at a cost as low as 1.5¢ per gallon of asphalt emulsion.
- Asphalt from any crude source can be emulsified successfully.
- Asphalt sticks even to water-soaked aggregate for road building. Any water on the surface is displaced. This "plating out" action means road building can go on even during damp or wet weather.



- Cationic asphalt emulsions are not sensitive to "hard" water during processing and use.
- They are effective on a broad range of aggregates, even many so-called inferior or hard-to-coat types.

Armour asphalt specialists are continuing research and application testings. Uses of cationic asphalt emulsions, for binding and waterproofing, now under study include highway construction and maintenance, linings for irrigation ditches and ponds, pipe and tank coatings, undercoatings, paper laminates and impregnants, as well as adhesives and mastics.

Patents for these cationic emulsions have been applied for.

For more data, check "C" in the coupon.

Where Armour Chemicals for refineries will work tomorrow

Alpha sulfonated fatty acids or their amine salts present interesting surface-active materials for hydrocarbon systems. Lubricity and extreme pressure stability additives are two of the possible areas of application now being field-tested.

Armour's chemicals are helping solve problems in every major area in refineries. Do you know enough about them? Talk to our chemical specialists for suggestions as to the right additive or basic chemical for your products or situation. Write or call Armour today.

NEWS NOTES

Chicago. Armour and Company announces its Chemical and Ammonia Divisions have been combined to form the Armour Industrial Chemical Company. The new organization will have its general offices at 110 North Wacker Drive, Chicago 6, Illinois.

•

Oakville/Toronto, Ontario. The Armour Industrial Chemical Company has established a Canadian sales office here to service Canadian industries with technical assistance in the use of cationic chemicals. Supplies of Armour Chemicals are now available from Canadian production facilities and local inventories.

•

Washington, D.C. Two U. S. patents, #2,851,344 and 2,851,345, were recently issued to Armour Chemical for the manufacture of amphoterics (Zwitterions) for use as additives in fuel oil.

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PW-7-59

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New, Easier Refinery Housekeeping

Improved methods for cleaning refinery equipment, both outside and inside, are being applied by processors today, as a part of their safety programs.

Plant cleanliness is an important factor in preventing accidents. Slippery floors, debris, spillage, and soot are dangerous and unsightly.

And shutdown and thorough cleaning of refinery process units is an important part of the regular refinery routine.

Gulf Oil Corp., at its Port Arthur (Tex.) refinery, uses hydraulic jet-type cleaners for outside plant housekeeping (picture).

These jets operate on regular plant steam and cold water. There are 14 units, located near steam and water outlets at strategic points throughout the refinery. Each has an operating radius of some 200 feet, by virtue of a ¾-in. neoprene hose.

A 50-gal. wheel-mounted tank holds a liquid detergent, which is mixed with water in the correct proportion. The steam, passing through a Venturi injector, picks up the water—and the detergent—and heats it to about 140F. This mixture is discharged through a nozzle, at high velocity (estimated at about 2 mi. per minute). The jet is so strong that it is still effective at a distance of 30 ft. from the nozzle.

The equipment is made by Sellers Injectors Corp., Philadelphia.

According to refinery personnel, the hydraulic jet is very effective in cleaning all types of equipment.

It is particularly useful, they say, to clean heat exchanger bundles. Due to the strength of the jet, the inner parts of the bundles can be reached much better than by conventional methods.

A new method for cleaning the inside of refinery equipment has been developed by Dowell Division of Dow Chemical Corp.

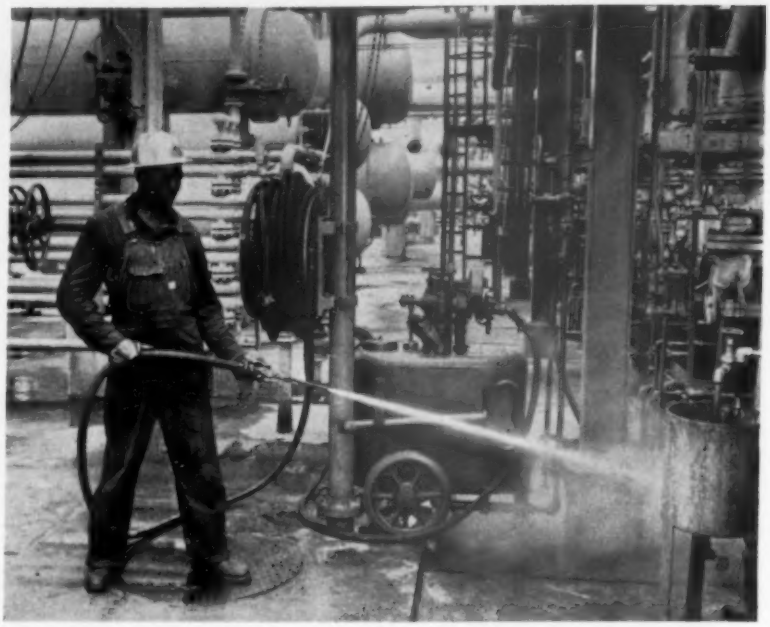
For many years, Dow has pioneered in the use of chemicals for cleaning industrial equipment of all sorts.

The new method makes it possible to clean large-volume equipment with a relatively small quantity of chemical, because the chemical is put into a foam.

Foam-to-solvent ratios generally average about 20 to 1 on discharge from the generator, but ratios up to 50 to 1 have already been produced experimentally.

The equipment consists of a foam generator, from which the chemical foam is pumped through the unit to be cleaned in a continuous flow. On leaving that unit, the flow of dirt-laden foam goes through a foam-breaker, followed by a filter; it is then recycled through the foam generator, and goes back through the unit being cleaned.

The process goes on until routine tests of the foam leaving the unit indicate that it is clean.



HYDRAULIC JET washes away debris and spillage at platforming unit at Gulf Oil Corp.'s Port Arthur (Tex.) refinery. This is part of a daily cleaning routine.

The prototype generator now in use is a 2,100-lb. skid-mounted unit. Dowell believes it will be able to develop a lighter unit as more is learned of aeration requirements.

Air pressure developed by the generator serves a dual purpose—actual manufacture of the foam through aeration, and subsequent forcing of the foam into the system that is being cleaned.

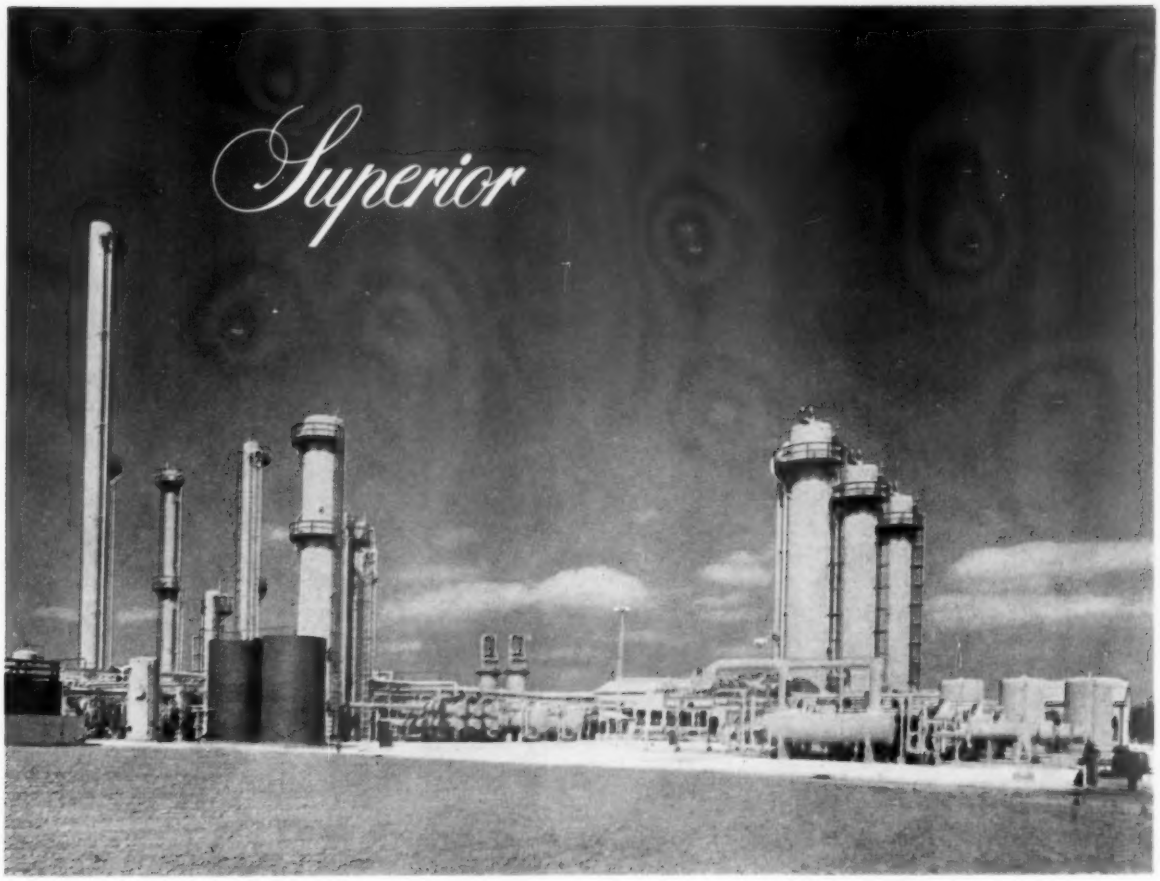
The generator is designed to provide a maximum foam output of 720 gal. per min., although 68 gal. per min. is the greatest quantity produced so far in commercial applications.

Conventional solvents, primarily hydrochloric acid, are used for cleaning, after being mixed with a specialized surface-active agent developed by Dowell.

The solvent is usually transported to the job site in concentrated form, then diluted with water according to the requirements of the individual job. A small quantity of surfactant is added immediately before the solvent is introduced into the generator for aeration.

Dowell says the chemical-foam cleaning method has many advantages. These include:

- Efficient cleaning of intricately designed equipment, because the foam completely fills every loop, bend, and cranny.
- Ease of removing sludge and scale that comes off the inner surfaces of the equipment. This has always been difficult with conventional cleaning methods, Dowell says.
- Elimination of the perplexing problem of after-rusting in chemically-cleaned equipment. Since the foam is introduced into an essentially closed system, there is little exposure to air, either during or after the cleaning process.
- The small amount of chemical solvent required to clean a large-volume system. Heretofore, the cost of the concentrated solvent required has been prohibitive in many instances.
- The possibility of cleaning with low-density foam equipment, which would not withstand great weight or hydrostatic pressures.
- Simplification of the waste-disposal problem, due to the continuous-flow feature of the process, and the substantially reduced quantities of chemical solvent required.



MORE THAN MEETS THE EYE

Pastel and bright color combinations used in this Hudson designed and built plant are utilitarian and also pleasing to the eye.

But beyond the eye appeal is the built-in 30 years experience of Hudson in building gas processing plants in most gas producing regions of the free world.

Such experience combined with constant alertness for improvements results in trouble-free plants, built on time, with careful balance between capital cost and operating cost to assure maximum return on the investment.

The above pictured absorption plant processing 300 million cubic feet per day of gas at about 1000 pounds pressure is located on the Mermentau River in Cameron Parish near the Louisiana Gulf Coast, and was designed and built for the Superior Oil Company.

A refrigerated absorption process is used with provision for future further refrigeration down to minus 50°F to increase gas throughput and/or product recovery. The plant has operated uninterruptedly since initial test start-up in October 1958.

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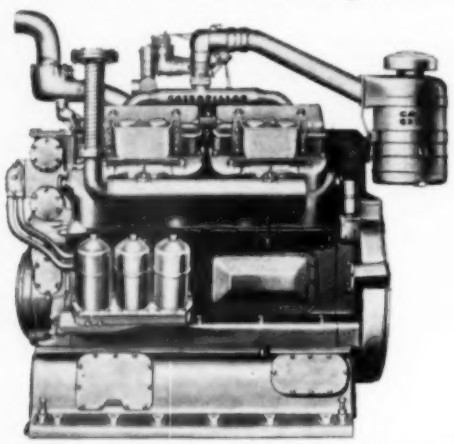
engine power
BY CATERPILLAR

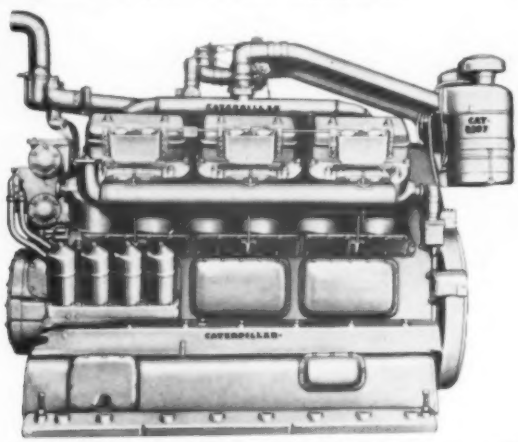
Higher horsepower ratings provide greater efficiency for oil men at no increase in cost

Although horsepower ratings for Caterpillar G375 and G397 Natural Gas Oilfield Engines are up, the purchase price remains the same. Along with more for the same money, you get all the traditional Caterpillar features—like low-tension ignition system. Safe and dependable, this system provides a hotter, more positive spark in the cylinders of all Cat Natural Gas Engines.

You can choose between two compression ratios. For operation on butane, propane or field gases, there is the 7.5:1 compression ratio. The 10:1 ratio—highest in the industry—is for operation with any methane-type gas. Of course, you can convert both engines to diesel from gas or vice versa simply by changing pistons and fuel systems. See your Caterpillar Dealer for complete new specifications—and to learn how they benefit your operation. Also, remember to specify Caterpillar for your oilfield equipment.



Rating for the G375 Natural Gas Engines, for continuous operation at 1300 RPM, without fan, now is 275 HP for 7.5:1 compression ratio. With the 10:1 ratio, it is 310 HP. New ratings for the G375 Natural Gas Electric Set with 10:1 compression ratio engine are 175 KW without fan, 160 KW with fan.



New ratings for the G397 Natural Gas Engines operating continuously at 1300 RPM without fan are 415 HP with 7.5:1 compression ratio and 470 HP with 10:1 ratio. New output for G397 Natural Gas Electric Set, with 10:1 compression is 275 KW without fan or 250 KW with fan.

CATERPILLAR

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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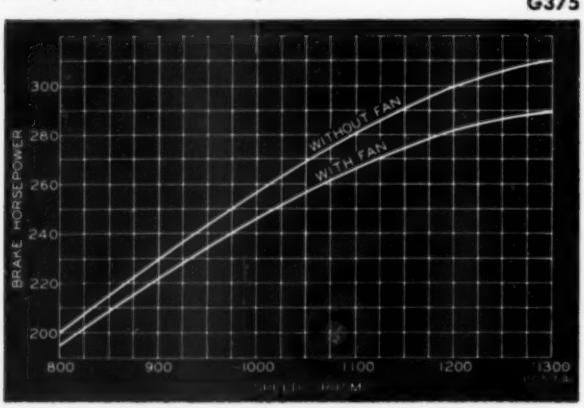
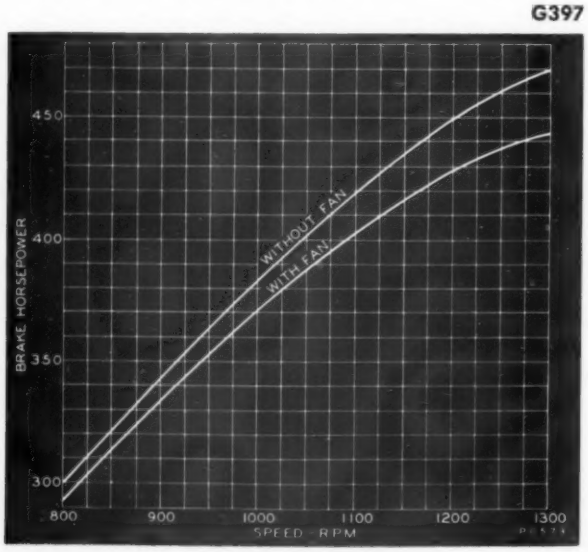
New Horsepower Curves for 10:1 CR Caterpillar Natural Gas Engines

G375



G397



What's New
IN PROCESSING

An agreement whereby Texas Butadiene & Chemical Corp. will license Cosden Petroleum Corp.'s process for the manufacture of polybutene was announced this week.

Texas Butadiene will produce the polybutene at its Channelview plant, near Houston.

At the same time, Cosden announced the completion of a major expansion of polybutene facilities at its Big Spring (Tex.) refinery.

•

Japan's first synthetic rubber plant is now in operation. The $1.3-million plant, with an initial capacity of 8,400 tons of rubber a year, is owned by Japanese Geon, Ltd., an associate of B. F. Goodrich.

•

Construction of a $2-million propylene unit at Sun Oil Co.'s Marcus Hook (Pa.) refinery got under way last week. The unit, designed to produce 120-million lb. of propylene a year, will go on stream late this year.

AviSun Corp., an equally-owned affiliate of American Viscose Corp. and Sun Oil Co., will convert the propylene into polypropylene at a pilot plant now under construction at New Castle, Del.

•

A plant for the extraction of butadiene from cracked gases will be built by Naphtachimie S.A., adjacent to the Lavera refinery of Societe Francaise des Petroles BP, near Marseilles. Some 6,000 to 7,000 metric tons of butadiene will be produced annually.

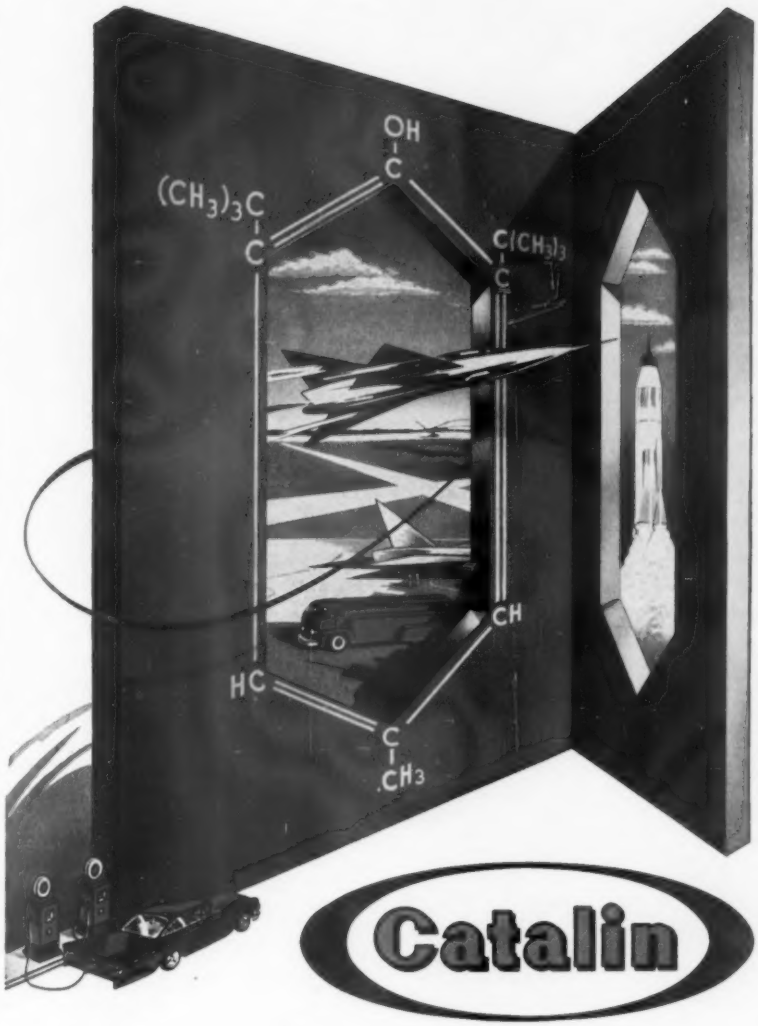
•

A new solvent plant and technical computer center are now in operation at Delhi-Taylor Oil Corp.'s Corpus Christi (Tex.) refinery.

The solvent plant will produce up to 2,500 b/d of heavy aromatic and aliphatic solvents. The computer center features a new Burroughs-Datatron 205 digital computer, which will be used to speed up technical and engineering calculations at the 40,000 b/d refinery.

•

Sunray Mid-Continent Oil Co. has acquired Suntide Refining Co., Corpus Christi, Tex. Sunray now owns more than 90% of the outstanding Suntide shares, and will operate the company as a direct subsidiary.



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SANDSTORMS interrupt oil operations and workers are wrapped "to the eyes."

GEOLOGISTS climb sandstone cliffs.

A Second Sahara Area

EDJELE oil field development is pushed for 50,000 b/d by 1961.

(One of a series of on-the-spot reports by a member of Petroleum Week's Paris Bureau)

ALGIERS—In the southeast Sahara, close to the Libyan border, Creps, a French company owned 35% by Shell, is working against the clock to ready its production for a late 1960 pipeline opening.

Creps (Cie. de Recherches et d'Exploitation de Petrole au Sahara) has told its technicians to get the company's first two fields—Edjele and Zarzaitine—ready for full-scale production by that time. It's the slated completion date for a 485-mi., 12-in. pipeline to the Tunisian port of La Skhirra (map). The wells are being shut in until then.

Company officials are counting on an output of 140,000 b/d in 1961, the first full year of production, with 50,000 b/d from Edjele and 90,000 b/d from Zarzaitine. This is nearly three-fourths of what two other French companies are scheduled to produce from Hassi Messaoud field, to the northwest, in its first year (PW—Jul.3'59,p36).

Though the Creps fields are dwarfed by the more spectacular Hassi Messaoud field, their combined reserves plus their low unit costs add up to what promises to be a profitable venture.

Just 3½ years after finding first oil at Edjele, the company has racked up a half-dozen fields, and as many more promising structures.

Creps first found oil in the Sahara in January, 1956. In addition to Zarzaitine and Edjele, the company has two fields at Tiguentourine and several smaller fields.

The company is owned 51% by the French government's Regie Autonome des Petroles, and 14% by its Bureau de Recherches de Petrole, SN Repal, and two oil-finance outfits—in addition to Shell's 35%.

Edjele, itself, is a long narrow field —12½ mi. x 2½ mi. Of the 80 tests completed by early July, there were 4 dry holes, 4 drilled to the water level to determine if there was a water drive, and 72 that will produce from at least one of the four different pay zones.

Two of these pay zones, D2 and D4, are in the Carboniferous. The D2, about 130 ft. thick, is found at levels around 1,400 ft.; and the D4, 66 ft. thick, at around 1,640 ft. The other reservoirs are in the Devonian —the F2 at 2,300-2,450 ft., 80 ft. thick; and the F4 at 2,560-2,690 ft., 130 ft. thick.

Most Edjele wells can produce from two sands—either the two Carboniferous or the two Devonian pay zones. A few have three pay sands.

All reservoirs are good, Creps say, with the F4 showing the strongest pressure.

Edjele reserves are estimated by Creps at 770-million bbl. in place, with 231-million bbl. primary recoverable.

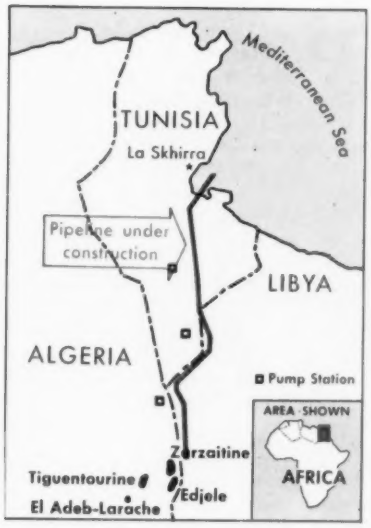
The figure, based on a 30% recovery ratio, is considered low by some technicians here. They think a ratio of 40%, giving 308-million bbl. of primary recoverable oil, is possible.

Edjele's D reservoirs produce by water drive, while the Fs have a substantial gas cap. Later on, the company says, it may start secondary recovery by reinjecting F gas into the D reservoirs.

Producing potential of individual wells runs from 350 to 700 b/d. It takes about 16 days to complete an Edjele well.

Creps' prize discovery to date, it boasts, is the triangular Zarzaitine field. It measures 5 x 9⅓ mi.

Of 37 wells completed, 35 are oil producers, one is a gas producer, and one was drilled into water.



A PIPELINE is started to the coast.

AND SITE CLEARERS work at Tiguentourine, with the "Erg" in the background.

Races to Get Its Crude to Market

Zarzaitine, too, has several pay zones. Most important is the Devonian F4, which was found deeper here, at levels between 4,100 ft. and 4,920 ft. Its thickness ranges from 130 to 230 ft.

The F2 reservoir is also found at Zarzaitine; it's some 66 to 131 ft. thick, at depths between 3,937 and 4,265 ft. Finally, there are four D reservoirs, toward the top of the Carboniferous, but technicians say their interest is limited.

In 1961, Creps will produce only from the F4. F2 production will come later.

Reserves at Zarzaitine are 2.1-billion bbl. in place, Creps says, with at least 525-million bbl. primary recoverable.

The field's gas cap is limited by a fault in the structure. But it is estimated to cover an area of 7¾ sq. mi.

Average producing potential is 1,400 b/d per well.

At Tiguentourine and La Reculee, Creps has established two separate oil fields, one at each end of large underlying wet-gas field.

The gas field, 37 mi. long and 18¾ mi. wide, was discovered at 5,906-6,562 ft. in the Ordovician.

At the Tiguentourine end of the field, a total of 16 wells completed resulted in 13 oil producers, two gas producers, and one dry hole. There are two oil reservoirs—D at about 2,625 ft. in the Carboniferous, and F at around 4,921 ft. in the Devonian—each about 98 ft. thick.

At the La Reculee end, there is only one pay zone—in the Devonian at around 5,906 ft., about 130 ft. thick. More than half of the field lies under the Erg Bourarhet, one of many sand seas that dot the Sahara.

Gas reserves in the field are estimated at 7.1-trillion cu. ft. But because of the irregularity of the structure, no one is yet sure about oil reserves—despite the number of wells drilled.

They think the field may turn out to be something like half or two-thirds the size of Edjele.

Tiguentourine and La Reculee wells have tested at the rate of 38 to 50 bbl. an hour. Both fields have gas-caps drive.

Creps doesn't intend to put these oil fields into production before 1962 at earliest. The gas field, however, may be put into production before that.

Creps would like to recover the condensate, then use the gas as fuel for its electric power plant.

In Creps' future exploration program the El Adeb Larache structure to the southwest will get priority.

The one wildcat drilled to date at El Adeb Larache found a 131-ft. pay zone at 4,921 ft. in the Devonian. It tested 63 to 75½ bbl. an hour. A second well is slated to be started momentarily.

In addition, it found oil at Oued Oubaraket, at Hassi Mazoula, and at Ikebrane—all in the Devonian.

Discoveries of Ordovician oil in two locations last winter may indicate reserves in that formation all over the desert.

The Ordovician is found just about everywhere in the Sahara.

Of two test wells, Creps completed at Ouan Taredert, one yielded wet gas from the Devonian. The other tested 38 bbl. an hour of crude from the Ordovician at 4,921 ft. A third test is now being drilled.

At Dome-a-Collenias, the only well drilled to date tested 50 bbl. an hour from the Ordovician at 3,937 ft.

Right now, Creps, rushing to meet its 1960 production deadline at Zarzaitine and Edjele, is not seeking Ordovician oil there.

Two Zarzaitine wells drilled to this formation found gas. At Edjele, the Ordovician showed only gas or water.

Total footage drilled has been steadily climbing each year. It doubled last year, to 296,063 ft.—114,650 ft. for exploration and 181,413 for extension and development wells. This is four times the footage drilled in 1956.

When production is started in 1961, it will represent a $242.5-million investment. That's the figure Creps estimates will be the total cost since exploration started in 1953.

New Oil Policy Emerging in Pakistan

KARACHI—A growing shift in Pakistan's oil policy planning has now emerged in its first concrete form: a new set of tougher rules for new oil grants.

The new concession policy, just announced by the government in a Gazette Extraordinary, does not completely supersede former terms, which will continue to apply to existing rights.

Broadly, the aim is to speed work under any new exploration grants, for which work obligations, rentals, and investment requirements are sharply hiked.

With one exception, the new rules apply solely to exploration and prospecting licenses.

The exception: a provision that the government may require payment in kind of its 12½% royalty. Under the old rules, this is payable in cash only. This is the only provision applicable to oil "mining leases" (development concessions), as well as to prospecting licenses once oil is found.

Increasing attention from the Italians, Japanese, and Germans to Pakistan's oil prospects and markets is a contributing factor in the policy shift that informed observers now see taking shape here.

Italy's state-owned Ente Nazionale Idrocarburi and Maruzen Oil Co., a leading independent refiner and marketer in Japan, are both actively interested in finding an opening in Pakistan.

The Germans have not yet actually made overtures on oil. But their moves to penetrate Asian markets (including Pakistan's) in other spheres is seen as an indicator that it's only a matter of time.

Political considerations also are reflected in the government's changing attitude on the whole present pattern of Pakistan's oil business.

Both public and official opinion in the country has been growing steadily more critical of what Pakistanis consider a monopoly of the oil trade by British-Dutch and U.S. firms.

In marketing, three companies—Burmah-Shell, Standard-Vacuum, and Caltex—handle the bulk of Pakistan's oil imports.

Last year these imports cost 265-million rupees (about $56-million at the official 21¢ rate). Today oil is still the biggest item on the country's import bill.

British and U.S. firms are dominant in oil exploration and production, too, though Pakistan has a 30% direct stake in some operations.

The new concession policy sets much stiffer obligations, and for shorter periods, as follows:

I. Exploration Licenses (for surface work, with no deep drilling):

- Three-year licenses will be extendable for one year only, with 50% acreage reduction. The old rules permit three one-year extensions, and ⅓ reduction for the fifth year and ⅔ for the sixth.
- Government approval of a proposed work program is required for the renewal—which, under the old terms, is almost automatic, even though a work program must be submitted.
- Annual fees are greatly increased—from a flat 100 rupees per 100 sq. mi. under the old terms, to a scaling rate: 10 rupees per sq. mi. in the first year; 20 in the second; 40 in the third; and 80 in the fourth.
- Minimum annual investment required for the work program is jumped to 250 rupees per sq. mi., from 5,000 rupees per 100 sq. mi. under the old rules.

II. Prospecting Licenses (exploration, including drilling for oil):

- The initial term is three years, renewable for one year only. The old rules: four years initially, renewable one more year, with further extensions at the government's discretion.
- The renewal will depend not only on approval of past performance and the proposed work program, but also on the government's review of the desirability of or necessity for further prospecting on the acreage.
- Drilling must start within the first year. The old rules do not obligate the company to drill within a specified period, though its work program must include drilling.
- Minimum annual investment in the work program is increased to 2,500 rupees per sq. mi., from 50,000 rupees per 100 sq. mi. under the old rules.

No reduction is permitted even if the total licensed area is less than 50 sq. mi. The old rules halve the outlay obligation in such cases.

The new concession policy will apply to any new acreage granted to the seven companies now exploring in Pakistan, as well as to newcomers.

The present seven currently hold 86 exploration or prospecting licenses, totaling 81,100 sq. mi. All but 25,800 sq. mi. of this is in West Pakistan.

The present roster includes four U.S. companies—Stanvac, Hunt International, Sun, and Tidewater; plus Royal Dutch Shell and two British-controlled firms—Pakistan Oilfields and Pakistan Petroleum.

In addition, a fifth U.S. company holds a one-year, nonexclusive "pre-exploration" permit in northern West Pakistan. It's Frontier Refining Co., an integrated Denver-based firm with production in the U.S. Middle West and in Canada, and a 20,000 b/d refinery in Cheyenne, Wyo.

Paria Drilling Program Slated

CARACAS—Indiana Standard's Pan Venezuelan Oil Co. is getting ready to join the oil hunt in the Gulf of Paria. Its first offshore wildcat will be spudded this year, sometime in the fourth quarter, on a 22,000-acre tract it won in 1957.

Platform construction will start soon for a deep test in the southern part of Block 7, a mid-Gulf tract along the Trinidad boundary.

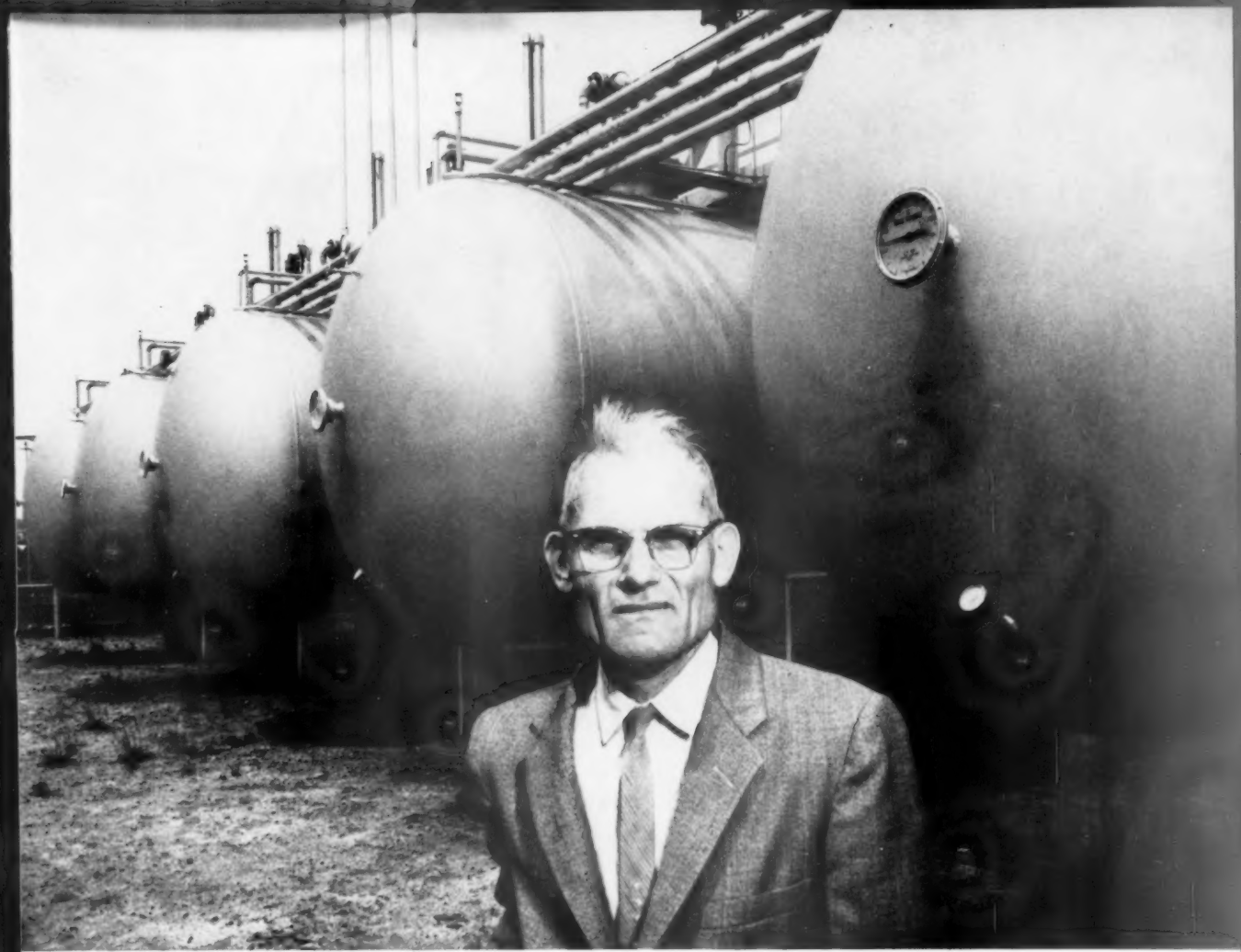
The test will be the first in an extended drilling program to evaluate the concession, for which the company paid a $4.7-million bonus. The acreage lies northeast of the Posa 112-1 discovery of Paria Operations, Inc., the first and so far only operator to drill in Venezuela's gulf waters.

Elsewhere in Venezuela, the company has had relatively disappointing results since its reentry in 1957. At that time, it paid close to $50-million in bonuses for concession stakes in several areas.

- **In Lake Maracaibo,** wildcatting is being renewed on the 24,700-acre midlake Block 12, which so far has only two dry holes, drilled toward the north end in 1957.

The third deep test, SLGX-12-3, will be drilled in the southeast. Sun Oil is operator on the block for itself, Pan Venezuelan, Atlantic, and Texaco Seaboard.

- **In Barinas,** four dry holes have been drilled so far—three last year, another this year—on Block 11, shared with Sun and Atlantic, the operator. There are no present plans for further exploratory drilling.
- **In Southern Monagas,** Pan Venezuelan has nine heavy crude producers, all shut in, on its concessions, in which Sun has an interest.



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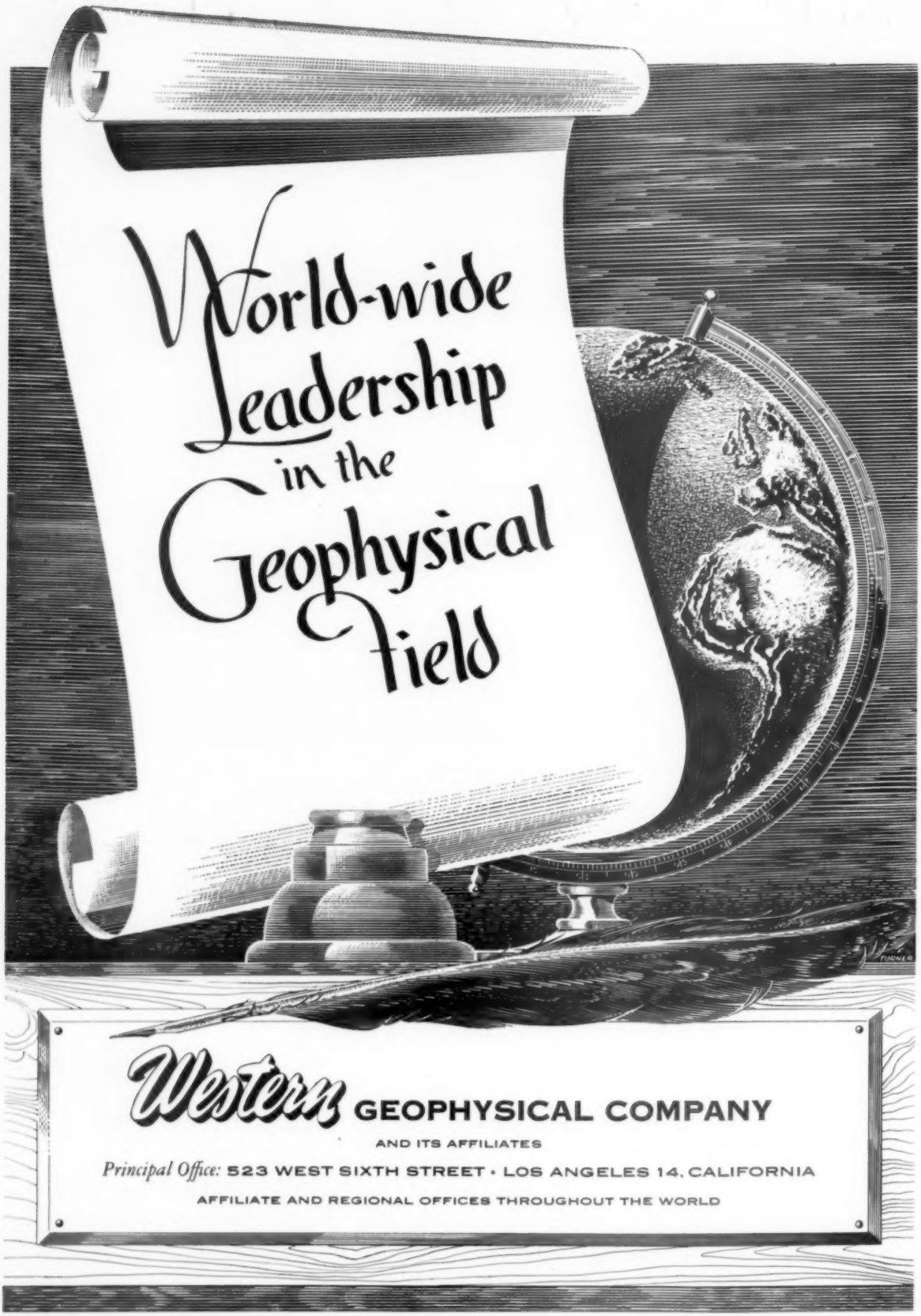
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What's New / AROUND THE WORLD

MEXICO—The first stepout from Pauley Pan American Petroleum's recent Tabasco offshore oil strike looks "even bigger" than the 1,680 b/d discovery well (PW—Jun.5'59,p56) "perhaps by thousands of b/d," crewmen told PETROLEUM WEEK.

The new well, ⅔ mi. from the discovery, is still under test. They said it found one sand that looks as good as either of two pays in the discovery, and another at least twice as good.

The discovery itself, they said, tested 772 b/d from 8,692 ft., and 912 b/d from 9,676 ft., both through ¼ in. choke.

•

POLAND—An offer to build tankers for Iraq, possibly in direct exchange for its royalty crude, will be discussed further in Baghdad by a Polish delegation, according to Warsaw's leading newspaper.

•

JAPAN—The government's second O.K. on new refining investment went to Nippon Petroleum Refining. It is 50% owned by Caltex, which will put up $5½-million toward doubling its capital (PW—Jul.17'59,p36). The increase is expected to meet part of the cost of a long-planned new refinery. The company's present capacity is 82,500 b/d.

•

ITALY—Rumania has placed $5-million worth of orders in Italy for oil and petrochemical equipment, including pipe. It is also reported to be negotiating with Italian petrochemical groups for purchase of process patents and knowhow.

•

AUSTRALIA—Exploration of Magellan Petroleum's 23-million-acre concession in the Great Artesian Basin was started this week with an airborne magnetometer survey in south-central Queensland. Gravity meter work also has been started on a second 3.2-million-acre concession near Winton.

•

PERU—The government this week cleared the way for resumption of drilling operations by Peru's biggest producer with a decree increasing most product prices 100%. The measure brings long-sought relief to Jersey Standard's International Petroleum, which suspended drilling eight months ago, protesting increasing losses on the low prices.

•

SPAIN—Proposed construction of a pipeline from the Lacq gas field of southwestern France into Spain's northern provinces will be approved shortly by the Spanish government, which will finance the line with a sponsoring Spanish banking group. Capacity is undecided; suggestions have ranged from 18-million to 106-million cf/d.

•

ISRAEL—A 49-year pipeline lease has been granted to an international investment group, which will put up $20-million to expand the Elath-Haifa line (PW—May15'59,p166). The group, primarily French, is headed by

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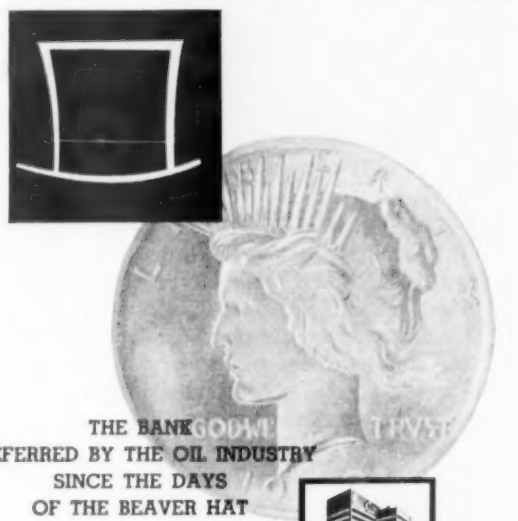

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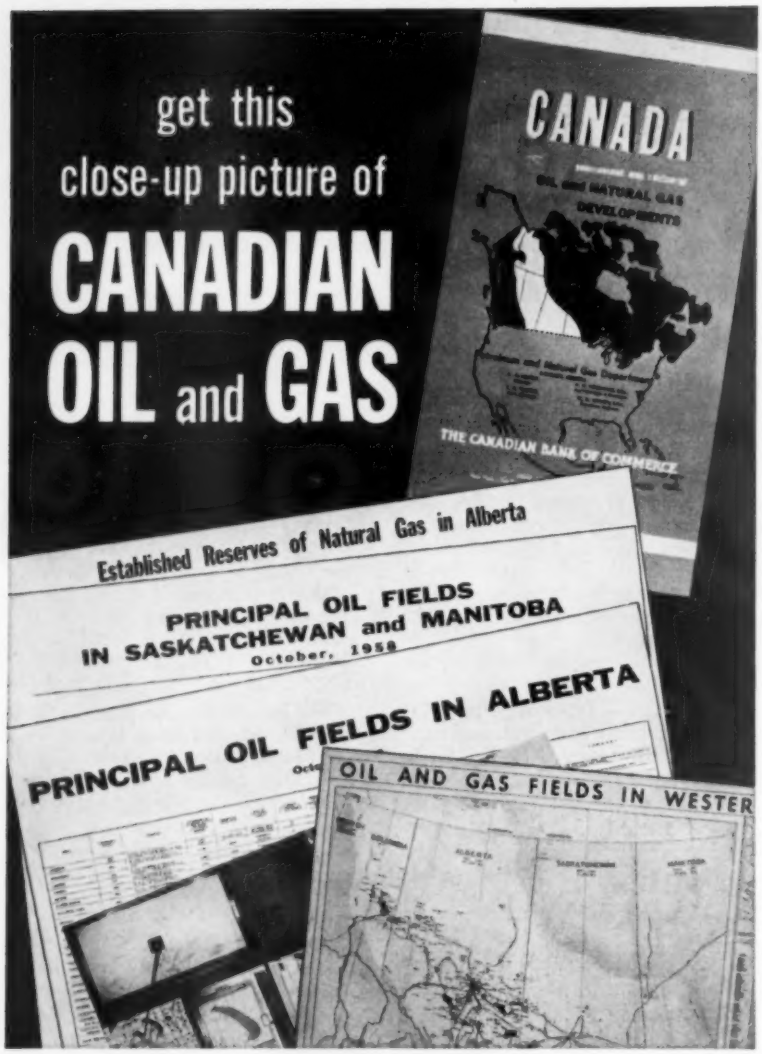

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banker Edmond de Rothschild and includes U.S. investors through Palestine Economic Corp.

•

AUSTRALIA—Sterling Oil of Oklahoma has agreed to drill a 10,000-ft. wildcat by 1961 on a 12-million-acre permit in the Great Artesian Basin, which it just acquired by purchase of Australia-American Oil Co., Tulsa. Cordillera Mining Co. retains an option to acquire 50% interest by completing evaluation of the acreage, on which Sterling is seeking permit renewals.

•

SPAIN—A long-pending exploration agreement will be initialed shortly by a Caltex associate and Campsa, the state marketing monopoly, a Campsa official stated in Madrid. The pact with American Overseas Petroleum covers present Campsa concessions in northern Spain.

•

Wildcats In The News

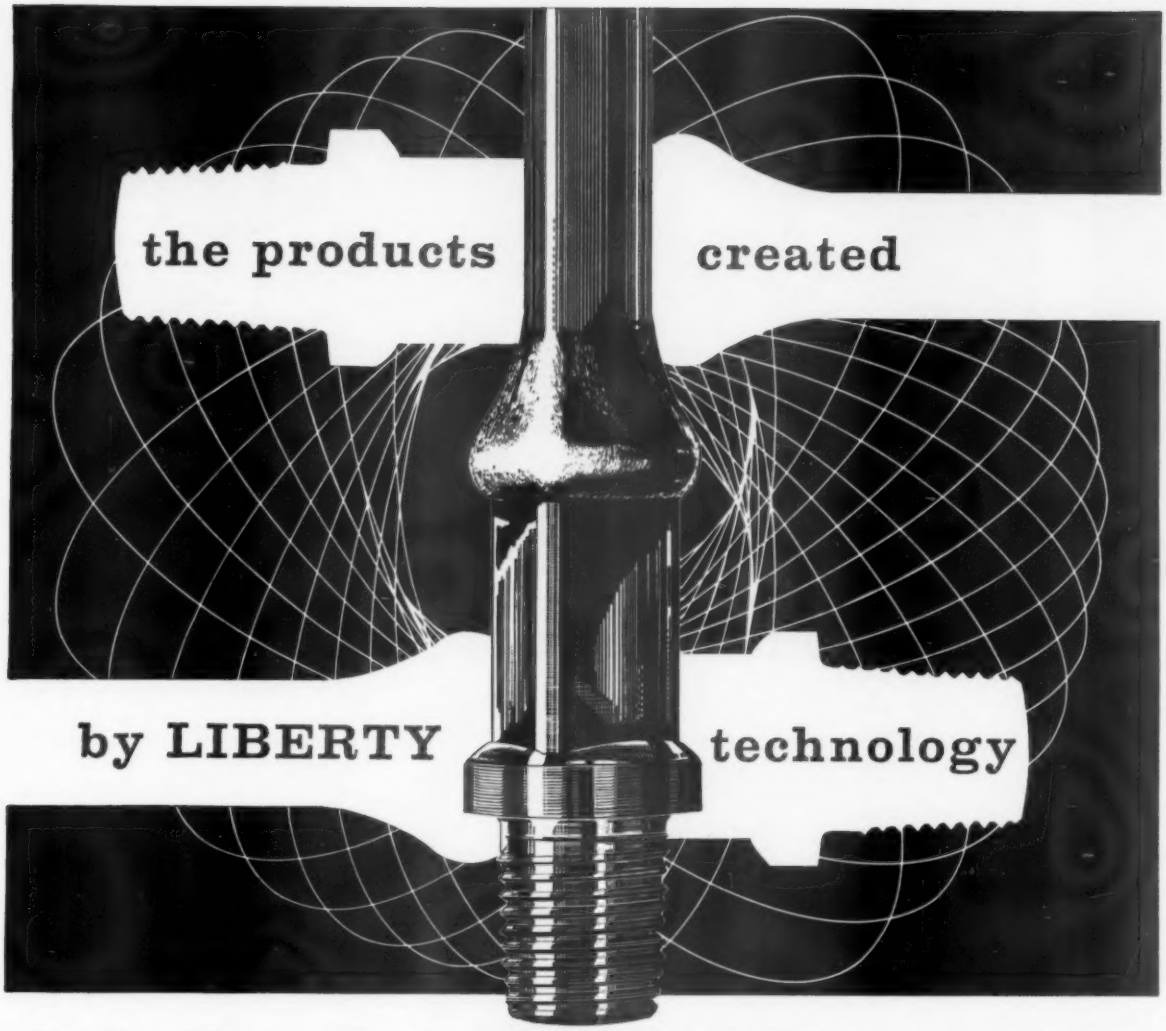
LIBYA—In a speed-up of its exploration here, Oasis Oil is now drilling below 1,600 ft. in the initial wildcat on its Block 59 on the southern border of Zone II. Operator for the Conorada group, Oasis now plans to have 8 rigs and 10 seismograph crews operating by year's end.

LIBYA—Mobil International has abandoned its No. 1 El Rakb at 10,145 ft. on Block 12 at a site 82 mi. north-northeast of Esso's Zelten discovery. The rig is being moved 20 mi. north to spud in No. 1 Amal.

BOLIVIA—Bolivian Gulf is starting a stratigraphic drilling program in the northern part of its contract area in the YPFB Zone. It's also near scheduled depth in its third wildcat in that zone—No. 1 Yoay, which has reached 15,257 ft. and it is below 4,960 ft. in its El Cedro wildcat, the first on its Zone 1 concession.

ITALY—Agip Mineraria has found a new natural gas field in southern Italy's Lucania region, 60 mi. from Bari and Taranto, 100 mi. from Naples. Four wells completed so far produce a total of 9.8-million cf/d.

SENEGAL—Two new wildcats are being drilled by the French-British Soc. des Petroles du Senegal. No. 1 Diourbel is in north central Senegal, and No. 1 Kolobane 30 mi. to the east. The firm has three seismic parties at work elsewhere on its acreage.



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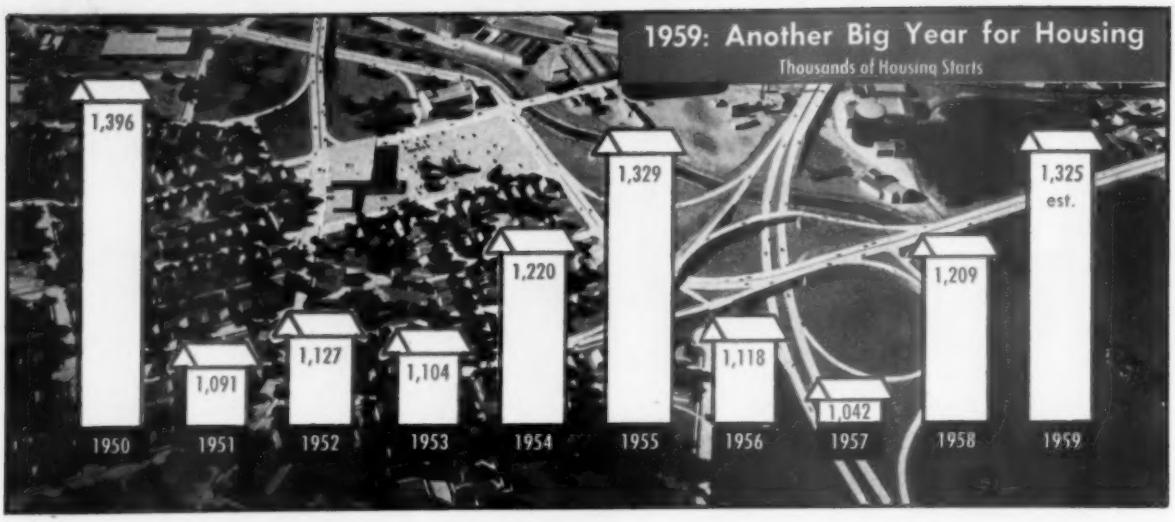

What the Housing Boom Means to Oil

The housing upswing is producing a stimulating effect on the demand for petroleum products. But oil marketers aren't getting their full benefits from the boom.

This is the year of another housing boom. And its effects on oil product demand are already being felt.

Not since 1955 have new housing starts topped 1.3-million (chart). But this year, McGraw-Hill's Economics Dept. forecasts a total of 1,325,000 new housing starts for 1959—up more than 100,000 over last year and almost 300,000 over 1957.

One product that is directly affected by a boom in housing is asphalt roofing. Over the first five months of this year, shipments of asphalt squares have risen 6% over the same period last year.

Asphalt shingles, a better indicator of residential housing demand, are being shipped at a rate 15.5% above the same period last year.

This higher trend is likely to continue for the rest of the year, despite a leveling off in new housing contracts this summer. According to a spokesman for a large roofing manufacturer, asphalt roofing demand lags behind the upswing in housing, because "we come last" in the completion of new homes. Consequently, the housing boom, which may have reached its peak, will continue to produce a steady demand for asphalt roofing through the rest of the year.

Oil burner installations in new homes, responding to the housing boom, rose during the first six months of this year—the first such increase since 1955.

New home installations for the first six months totaled 85,758, according to Robert Gray, president of the National Fueloil Council. Last year, the total was 75,952.

Since two-thirds of burner installations normally come in the second half of the year, according to Gray, oil burner installations could top 250,000 in new homes alone. Last year's figure was 163,300.

The increase in housing construction this year will generate several other long-range effects on oil demand.

Aside from the immediate need for asphalt roofing and heating oil to fill new burners, new homes and new communities generally stimulate oil demand in a host of indirect ways.

New roads and new highways, reaching out from the city, require asphalt. Motorists, commuting from new communities to jobs and shopping centers, require more gasoline. Electric utilities, generating more current for an increased housing load, require more residual fuel oil.

Despite these many benefits, the oil industry is not deriving its full share from the housing boom. With each passing year, oil falls behind gas in new home installations of central heating equipment and fails to take advantage of the boom in other household appliances.

Even if oil burner installations in new homes do top 250,000 this year, the gas industry expects to triple this amount with gas burning installations. Over the next 12 months, the American Gas Assn. forecasts 760,000 new residential heating customers to be gained from new homes alone.

And while a decline in oil installations may be expected next year (due to a downswing in housing), gas expects to install 779,000 units in new homes during the 1960-61 heating season.

There are several reasons for this poor competitive showing, but the most important is the comparatively higher price of oil burner equipment compared to gas.

A building contractor faced with a tight budget naturally will turn to gas if he can save as much as $200 on each burner. Furthermore, oil burners are still classed with coal and wood by local building codes when it comes to flue requirements. Gas, on the other hand, does not require an expensive flue.

Another telling factor is the subsidy that public utilities offer contractors when they install gas equipment. Small fuel oil dealers cannot hope to compete with gas utilities on this score.

There is, nevertheless, a growing sense of optimism among oil marketers in the new home market. It is

Take lubricants, for example

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Petroleum is like many other products, spending some part of its life in a steel shipping container. A wide variety of products arrive at their destinations stable, safe, sanitary, in carbon or stainless-steel shipping containers that are manufactured by United States Steel.

USS steel drums and pails come in a variety of sizes and closures, offering flexibility in choosing a shipping container, whatever you may manufacture. They represent the largest, most complete line available today, for the shipment of products as varied as paint and petroleum, chemicals and food, additives and essences.

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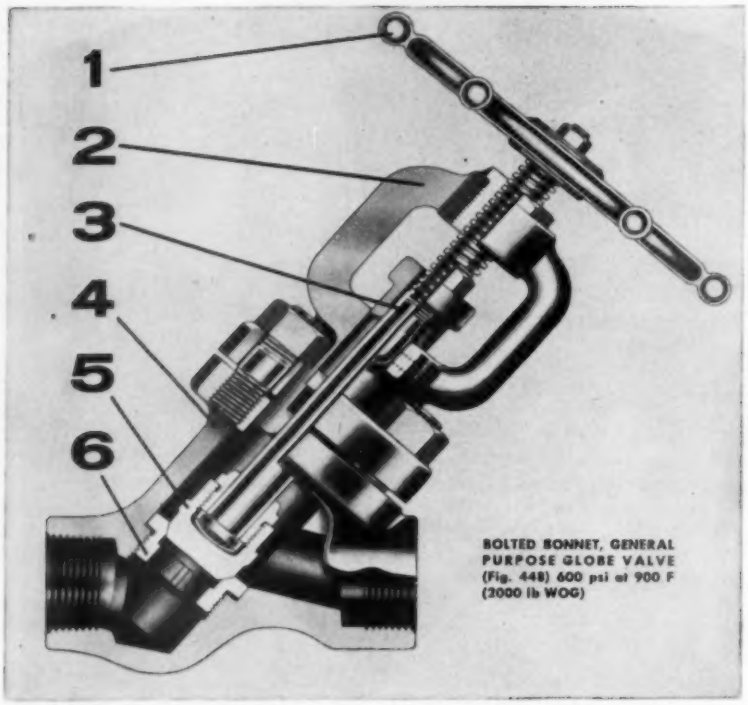

BOLTED BONNET, GENERAL PURPOSE GLOBE VALVE (Fig. 448) 600 psi at 900 F (2000 lb WOG)

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Edward Globe Valves for petroleum services

For hundreds of petroleum services from oil field to refinery, Edward globe valves give longer, trouble-free service at less cost. Here are some reasons why:

1 Handwheel of malleable iron is properly proportioned and knobbed for easy gripping

2 Forged steel yoke withstands rugged service

3 Stem is wear resistant EValloy 13% chromium stainless steel

4 Body of forged steel is streamlined for minimum pressure loss

5 Disk of 13% chromium stainless steel or chromium-cobalt-tungsten alloy steel is also available with Stellite hard surface

6 Replaceable seat is made of wear-resistant EValloy 13% chromium stainless steel or hard-surface Stellite. Integral Stellite seat also available

MANY FEATURES AVAILABLE— With Edward globe valves you have a wide selection of features.

- inside screw or O.S. & Y. construction
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Edward builds a complete line of cast and forged steel stop, check, and stop-check valves for all pressures and temperatures.

For additional information, see your favorite distributor, or write for Globe Valve Bulletins 551 & 14G to Edward Valves, Inc., 1236 West 145th Street, East Chicago, Indiana. Subsidiary of Rockwell Manufacturing Company.

UNION BONNET, INSIDE SCREW GLOBE VALVE (Fig. 2698) 600 psi at 900 F (2000 lb WOG)

EDWARD STEEL VALVES
another fine product by
ROCKWELL

based on three encouraging trends: toward more research, more promotion, and more cooperation.

API's program to coordinate equipment research and to uncover new uses for oil represents a modest ($75,000) beginning (PW—Mar.13 '59,p87).

Earlier this year, several large oil jobbers agreed to pool $300,000 over three years to develop a low-cost oil burner that could be made available to equipment manufacturers. This group, Operation Oil Heat Asso., has thus far spent $20,000.

With successful research, it is conceivable that the demand for heating oil could be just as great in summer as it is in winter.

According to C. M. MacCracken, president of Jet-Heet, Inc., there is nothing about oil that limits its use in all of the household appliances now powered by gas.

MacCracken, who was in great part responsible for initiating the API project, says the industry is on the verge of developing a water heater that is competitive with gas equipment. And after the development of "the proper kind of oil burner," air-conditioning, cooking, refrigeration, clothes drying, and incineration powered by oil are all possibilities, he says.

The introduction of oil air-conditioning alone could flatten out the demand curve for oil, if the oil equipment became as popular as electric equipment, he notes.

On the promotional side of the fuel-oil comeback, oil jobbers and suppliers are teaming up to promote the idea of oil heat among prospective new home owners, in addition to owners who are about to replace their old burners.

The National Fueloil Council has agreed to match local promotional campaigns dollar-for-dollar in a drive that is aimed indirectly at influencing the builder in his choice of equipment by convincing the home owner that he is safer with oil heat.

Several oil jobbers in the east are toying with the idea of pooling their finances so that they may actually give builders the oil-burning equipment for new home installations.

These equipment donations may even include a subsidy to builders—to make the deal more attractive. Admittedly still in the thinking stages, this plan would allow for the recovery of burner costs through annual installment charges paid by home owners. Such charges, added to the price of fuel, would permit the home owners to gain full ownership of their burners after several years.

1959—100th Anniversary of the Oil Industry... 70th Anniversary of Standard Oil Company

whale oil lamps to space rockets

How the oil industry helped the United States to become the world's most productive nation!

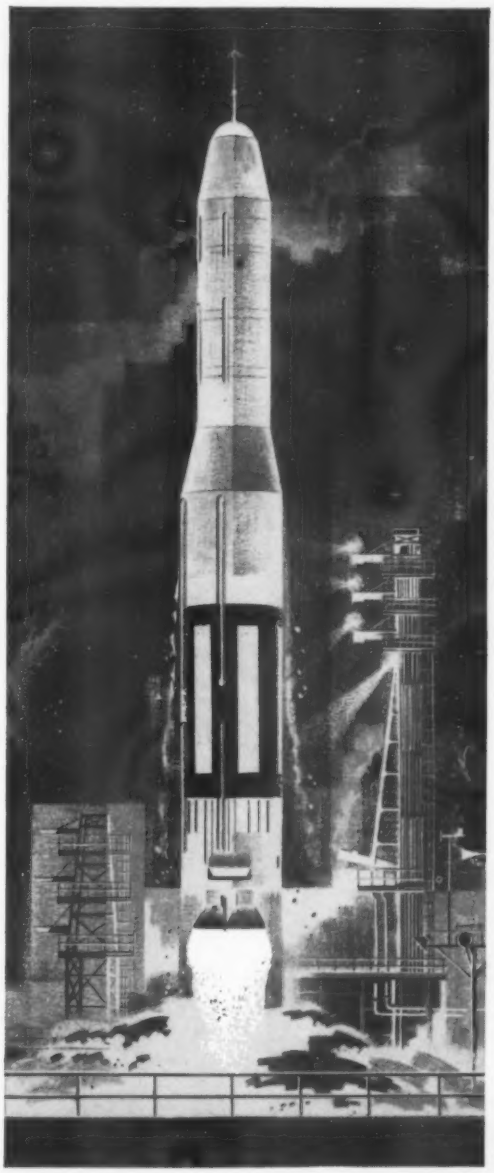
1859 Colonel Drake discovers oil—and the decline of the great whaling industry is in sight as thousands of lamp users turn from whale oil to kerosene.

1889 The automobile is in its infancy—weak and unpromising. Standard Oil Company is born on June 18, 1889. The following year the company's first research laboratory is opened at Whiting, Indiana.

1903 Two bicycle mechanics named Wright fly an odd-looking machine at Kitty Hawk. Almost 33,000 autos are on the road, but the horse is still supreme. Standard Oil is building a new refinery at Sugar Creek, Missouri.

1911 Almost 640,000 motor vehicles are on the road. Dr. William M. Burton and Dr. Robert E. Humphreys, famous Standard Oil scientists, discover the secret of mass producing gasoline economically. The company becomes independent of all other Standard Oil companies.

1923 The automobile is here to stay. More than 15 million motor vehicles are on the highways. Standard is the first major oil company to sell gasoline containing tetraethyl lead, anti-knock agent.



1940 The greatest demand in history for aviation fuel is near. Standard Oil puts into operation the world's first catalytic reformer, which produces higher octane gasoline than was possible before.

1959 The Space Age is dawning. New fuels and lubricants for rockets and jets come from Standard Oil laboratories to help make space exploration possible and to strengthen America's defenses. Standard Oil marks its 70th anniversary.

Here are some important developments by Standard Oil, a leader and a pioneer in petroleum research.

- How to mass produce gasoline economically. This opened the way to modern automotive transportation.
- How to recover more oil from almost-dry wells. This added billions of barrels to America's oil reserves.
- How to eliminate gasoline gumming. This meant lower repair bills for car owners.
- How to dewax motor oils efficiently. This meant better car performance and fewer trips to the repairman.
- How to make clean burning solid fuels for rockets. This was a big step forward in America's missile program.

These, and many other Standard Oil developments, have played an important part in man's progress from the horse-and-buggy age to the Space Age.

STANDARD

STANDARD OIL COMPANY
(INDIANA)

THE SIGN OF PROGRESS...
THROUGH RESEARCH

What's New / IN MARKETING

States that are not using asphalt on interstate highway construction are losing savings of as high as 50% on material cost, the House Ways & Means Committee was told last week.

Reid Brazell, of the National Petroleum Assn., singled out Missouri as one state that is reluctant "to consider asphalt pavement for its 1,000 mi. of interstate roads."

"Missouri is following this policy in spite of the fact that she has already demonstrated she can save as much as 50% with asphalt construction," Brazell said.

Dr. Jesse E. Buchanan, president of the Asphalt Institute, told PETROLEUM WEEK that several states, although they haven't announced a policy about using only concrete, consistently choose only concrete in selecting pavement for highways.

Buchanan lays the blame on the 90%-10% formula of federal-state financing, which, he believes, does not provide sufficient incentive to the states to practice economy.

The unexpectedly high cost of the interstate highway program is the main reason for President Eisenhower's insistence on an increase in the federal gasoline tax.

•

Despite the fact that many jobbers are being taken over by majors (PW —Jul.24'59,p15), there will always be "a profitable place in this industry [for] the jobber or distributor who is a good businessman," E. E. Wall, president of California Oil Co., told a Jobber Management Conference of the Empire State Petroleum Assn. last week at Cornell University, Ithaca, N. Y.

The jobber has the important advantage of being a local distributor, with better understanding of his customers, land values, and employees than integrated companies, Wall pointed out. He said that Otis Ellis was exaggerating when he told the National Oil Jobbers Council in May that, "if current trends continue, there won't be enough jobbers left in eight or ten years to start a good crap game."

•

Oil advertising has moved into movie theatres with the new campaigns of South Penn Oil Co. and Site Oil Co.

The Pennzoil Division of South Penn Oil is showing 26-second, full-color commercials in drive-ins and conventional theatres. Site Oil, of St. Louis, is telling moviegoers from Texas to Illinois about a discount-giveaway campaign with two 60-second film commercials shown in drive-in theatres.

•

Sales at gasoline service stations climbed to an all-time peak in June. The total was $1,494,000,000 compared to $1,427,000,000 in May.

Last year, station sales declined by $4-million in June, to $1,331,000,000. A June to June comparison in station sales shows a 12.2% increase this year, compared to a 3.2% increase in gasoline demand. Increased non-gasoline sales (which comprise 50% of total retail sales in some stations) account for most of the difference.

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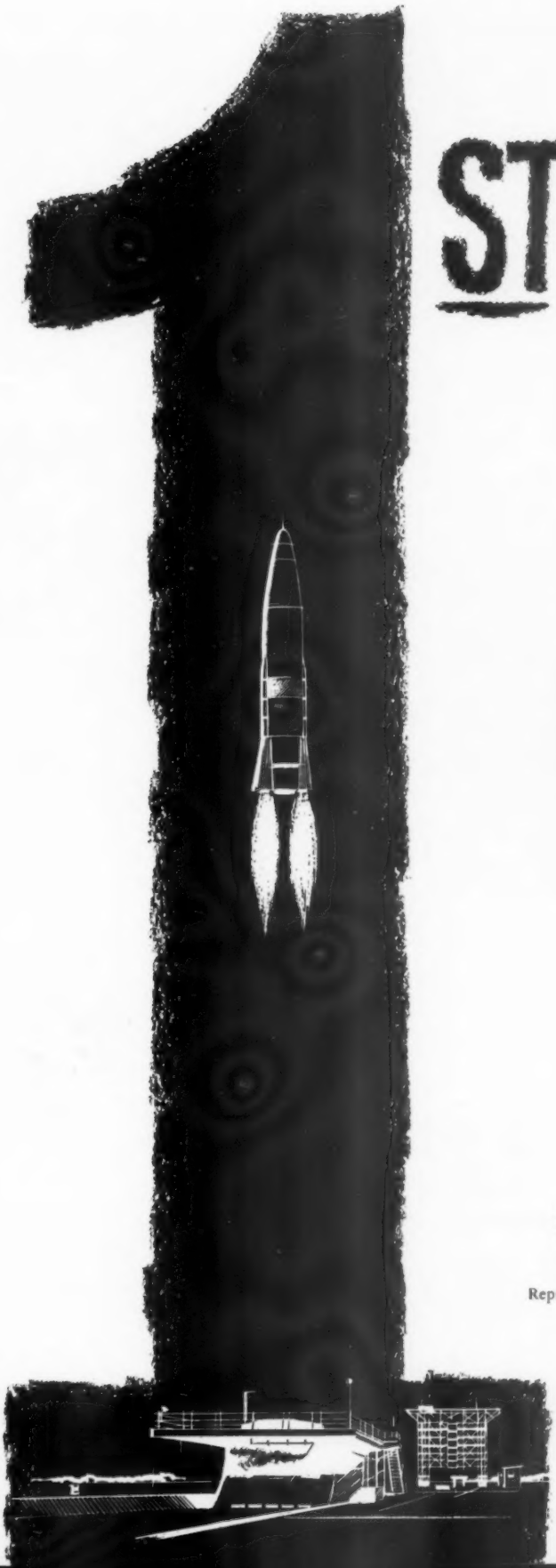

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THE WORLD'S LARGEST DISTRIBUTOR OF DIESEL ENGINES

DEPT/Service & Equipment Companies

WILLIAM E. SCARBOROUGH rejoins Reed Roller Bit Co. in the newly created position of domestic sales manager, with offices in Houston. He left Reed in 1956 to become assistant chief engineer of the Security Engineering Division, one of the Dresser Industries, and later became manager of quality control for Security.

W. E. Scarborough H. T. Harvey

H. T. (Hugh) HARVEY has been appointed operations manager of Welex of Canada, Ltd., with headquarters at the company's new office in Edmonton. He succeeds **S. H. (Stan) Nelner,** who was recently named vice-president for operations, in Calgary. Harvey was formerly eastern division manager for Welex, in Regina.

WILSON SUPPLY CO., Houston, has established a new international division. **Charles Remington** is manager of the division's New York sales office, and **Wayne Harris** is in charge of Latin American sales, with offices in Houston. The new organization will have representatives in all major overseas oil producing areas.

ROBERT O. ALBERT has been named manager of the Buenos Aires (Argentina) laboratories of Petroleum Technologists, Inc. Albert transfers from Santa Barbara, Calif., where he has been manager of the company's offshore laboratories. Complete laboratory equipment has been shipped to Buenos Aires, and operations will begin soon to provide the same services for Argentine producers that are available in the United States.

GEORGE ENG is the new sales manager for Western Co.'s Midland division, which includes West Texas and eastern New Mexico. **Jean Barrett** is sales manager for the Oklahoma City division, which includes Oklahoma, Kansas, West New Mexico, the Texas Panhandle, and the Four Corners area of Colorado. Eng was formerly city sales manager in Midland, and Barrett was in charge of metropolitan sales at Ft. Worth. **Bob Cocanower,** formerly sales engineer in Midland, was named to metropolitan sales duties in Ft. Worth. **Mike Adams,** formerly district manager at Seagraves, Tex., becomes division engineer at Midland. **Frank Bruner,** formerly sales supervisor at Seagraves, succeeds Adams, and **Cecil Dobbs,** formerly sales engineer at Andrews, Tex., succeeds Bruner. **Bob Peacock** is the new district manager of Western's Kankin (Tex.) district. **Bob McMillan,** formerly located at Monahans, Tex., transfers to Kermit, Tex. to succeed Peacock as sales supervisor there.

G. Eng R. L. Forsythe

RUSSELL L. FORSYTHE is the new manager of the Pacific Coast area of Schlumberger Well Surveying Corp., in Los Angeles. He succeeds **Fritz Taves,** who is retiring. Forsythe, with the company since 1937, was assistant area manager in Canada from 1950 to 1952, and Kansas division manager from 1952 to 1955. He has been located in the Pacific Coast area since 1955.

H. BEN YOUNG has been elected a staff vice-president of ACF Industries, Inc., with offices in New York. He was formerly director of engineering and research for W-K-M, division of ACF, in Houston. In his new position, Young will be concerned with engineering and research in ACF's seven operating divisions, including W-K-M. Before joining the ACF organization, he was chief engineer, and then director of overseas projects, for Mission Mfg. Co.

J. J. DUNN has been named manager of export sales in the marketing department of Johnston Testers, Inc., in Houston. Dunn joined Johnston in 1958 as a sales engineer, and became assistant to the Northwest division manager in Denver, earlier this year. Before joining Johnston, Dunn was associated with Servicio Tecnico de Pozos, in Anaco, Venezuela.

J. J. Dunn W. G. Sharp

WILLIAM G. SHARP is the new manager of the export division for Continental-Emsco Co., in New York, and **JoEarl Morris** succeeds him as manager of Continental-Emsco Co. C.A., in Caracas, Venezuela. Sharp, with Continental-Emsco since 1947, will direct the sales and service of the company's equipment in 35 countries where Continental-Emsco operates or has agents or representatives. Morris was formerly assistant manager of the Venezuelan company.

G. R. King J. C. Bonney

G. R. KING is the new laboratory director of Hughes Tool Co., Houston, and **J. C. BONNEY** is the new assistant laboratory director. King, who has been assistant lab director since 1954, has specialized in mechanical testing methods since he joined the Hughes Research & Engineering Laboratory in 1937. Bonney, with the company since 1942, has been engaged in the development of wear resistant materials and the processes for their application to rock bit cutting structures, bearings and component parts, and tool joints.

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Oil hauler cuts costs with tough, economy-minded Chevy rig

"Our Chevrolet tandem gives us top economy and dependability, on or off the road!"

—LLOYD KIRK, VICE PRESIDENT
MOHAWK PETROLEUM COMPANY
TULSA, OKLAHOMA

"Our new Chevrolet tandem truck, Series 100, is doing a fine job. We especially like its ability to give us top economy and dependability, on and off the highway. We started as a crude oil purchaser with only two units but we are now operating in Kansas, Oklahoma and Texas with fifty-five units.

"This tandem model has already established its position in our fleet as an economical, work-wise rig, and we are looking forward to a long and profitable life for it. We are well pleased with the performance of our Chevrolet trucks."

Chevy, you'll find, is winning a lot of new boosters among oil haulers, for a number of good reasons. Reasons like money-saving *power*, for instance. Chevrolet for '59 offers newly improved valve-in-head 6's that nurse a gallon of gas like nothing in trucks has before. Or big V8's for every Series that include the shortest stroke design—the best saving design—in the field. And for the *toughness* that leads to low maintenance, Chevy's advanced chassis components are specially designed for the capacity to out-muscle the roughest kind of runs. For the *latest* in low-cost hauling equipment, see your Chevy dealer! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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COREXIT is an organic, adsorptive-type corrosion inhibitor. It is available in many different formulas to meet the needs of every producer. It is non-toxic and easy to handle. It has no objectionable odor.

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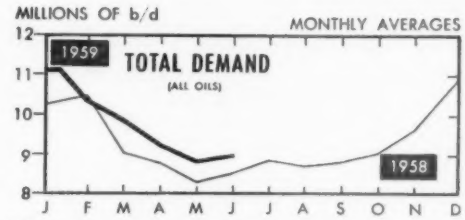
PETROLEUM WEEK'S

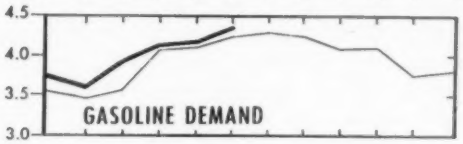
Fingertip Figures



Figures for period ended July 24, except as noted

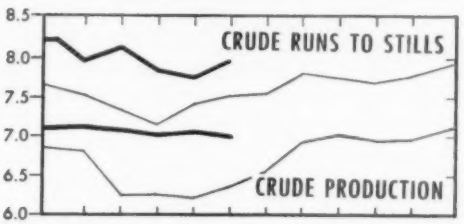
TOTAL DEMAND

Latest 4-week average	8.981
Year ago	8.678



GASOLINE DEMAND

Latest 4-week average	4.512
Year ago	4.351

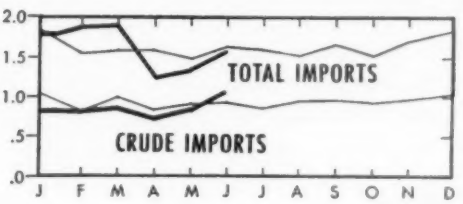


RUNS TO STILLS

Latest week	8.042
Previous week	7.946
Year ago	7.517

CRUDE PRODUCTION

Latest week	6.855
Previous week	6.858
Year ago	6.536

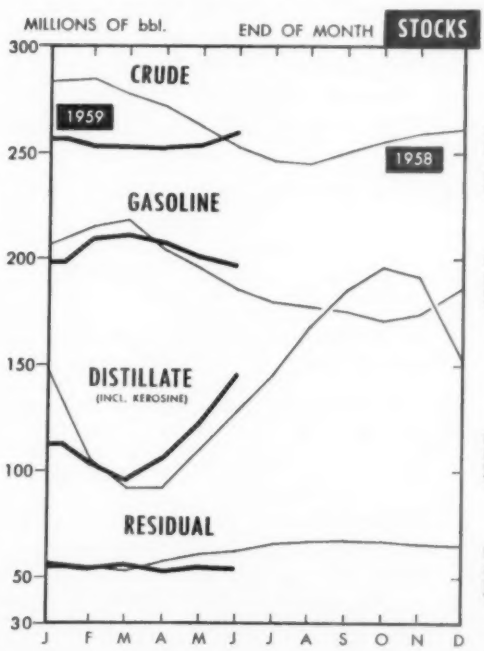


TOTAL IMPORTS

Latest week	1.245
Previous week	1.225
Year ago	1.294

CRUDE IMPORTS

Latest week	.757
Previous week	.847
Year ago	.747



CRUDE STOCKS

Week-ended 7-18	270.4
Previous week	270.3
Year ago	251.7

GASOLINE

Latest week	188.2
Previous week	189.9
Year ago	178.8

DISTILLATES

Latest week	163.4
Previous week	157.6
Year ago	140.9

RESIDUAL

Latest week	54.8
Previous week	54.3
Year ago	66.5

Statistics are playing a strange game: A considerable amount of refinery capacity is shut down by strikes, yet crude runs and crude inventories are rising.

Up through last week, about 200,000 b/d of refining capacity normally in use was closed by strikes at three Indiana Standard affiliated refineries. And at the start of the week, a fourth Indiana Standard plant with 215,800 b/d of capacity was struck.

But refinery runs last week jumped 96,000 b/d over the previous week to 8,042,000 b/d.

The effect of increased runs was felt in product stocks.

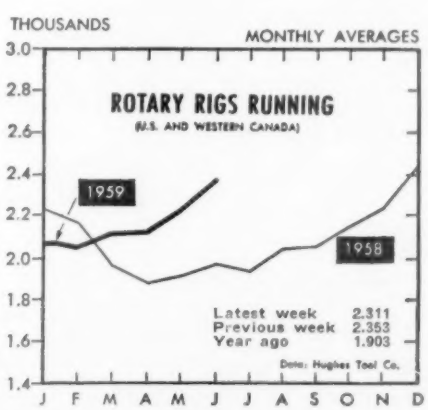
Gasoline stocks, which had been falling by over 2-million bbl. each week for the past four weeks, slowed their decline to only 1.7-million bbl. last week. This reduced rate occurred despite continued high gasoline demand.

Stocks of distillates leaped upward by 5.8-million bbl., a gain which bettered the average weekly gain of the previous four weeks by approximately 1-million bbl.

Crude stocks turned up after a one-week decline.

Except for the 3.8-million bbl. drop in the week ending July 11, crude stocks have been building up steadily since May. This buildup has continued despite reduced production and high refinery runs.

Last week stocks rose 79,000 bbl. to 270,367,000 bbl., almost 19-million bbl. over a year ago, but 15.5-million below two years ago. The current small gain resulted from a 1,420,000 bbl. increase in domestic stocks, which offset a 1,341,000 bbl. decline in foreign stocks.



The Market Trend

You, Too, Can Get to Be a Market Leader

The "leadership" in the markets is very poor these days. It's enough to make a conscientious antitrust attorney ask for a leave of absence.

The worst defection—at least, in the eyes of some Texans—was Atlantic's recent cut of 20¢ in its purchase price for East Texas crude. As far as anybody can make out, Humble—Texas' largest crude buyer—is still very much engaged in the business of producing and purchasing crude in East Texas.

A look at gasoline in the Midwest shows there's no respect left any more. Phillips Petroleum called the turn on the stronger gasoline position, advancing 0.5¢ to 0.8¢ in seven states. Phillips started an upturn in Iowa, Minnesota, the Dakotas, Kansas, and parts of Wisconsin and Missouri, a territory sometimes loosely referred to as "Indiana-land." Three days after Phillips' move, Standard followed.

The Phillips lead on motor gasoline in the Midwest has an interesting sidelight when it comes to propane. A substantial—if not the most substantial—producer of propane, Phillips posts a contract price of 4¢ for tank car lots in Oklahoma. And companies small enough that Phillips could put them in its pocket will sell for 2¢ spot, and will shade the 4¢ price by as much as 0.75¢ for extended deliveries.

Nobody seems to care about the other fellow's feelings in foreign markets, either. At any rate, suppliers can't be too solicitous about their neighbors when they'll quote as low as 8¢, delivered Europe, (a real tough price) for 91-octane gasoline to the military.

Witness the uneasiness that set in early this month when BP Trading initiated a change in cargo prices at Abadan. BP is the largest seller at Abadan, and is one of the biggest refiners in the Persian Gulf area.

BP advanced its gasoline cargo-lot prices 0.2¢ to 0.3¢ at Abadan, and cut its distillate prices by as much as 0.3¢. BP's move was made on July 11. With one exception, nobody else moved at all in the Persian Gulf area until July 16. At that time, Cal-Tex affiliates cut distillate prices, but refused to advance on gasoline. Mobil Overseas thought about the move for six more days before it moved. Even then, Esso Export was still studying the market.

"Leadership" today apparently is a game at which any number can play—and lose.

No. 6 Fuel At Baltimore:

Nobody talked much at Baltimore last week, but the word was that delivered contract cargoes of No. 6 were going as low as $1.80 a bbl.

This price is 20¢ below the Gulf and Caribbean. It would pay you to backhaul Baltimore No. 6 to Houston and resell it.

Lakeport Prices:

Suppliers for the first time are posting ships bunker prices for bunker "C" fuel at most of the ports on the Great Lakes. This development followed the opening of the St. Lawrence Seaway.

For some companies, however, sales will be disappointing in the first summer season. The traffic is still very light.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of July 27

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem 12.125-13
- Gasoline, 92 oct reg 11-11.5
- Kerosine 8.5-10.375
- Heating oil, No. 2 ..... 8.125-9.875
- Gas oil, 48-52 d.i. 8.25-10.125
- Fuel oil, bunker "C" $2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130 ..... 15.25
- **Gasoline, 93 oct research prem ..... 11.25↑**
- **Gasoline, 87 oct research reg ..... 10.375↑**
- **Gasoline, 79 oct research ..... 9.625↑**
- **Gasoline, 70-72 oct motor method ..... 9.5↑**
- Kerosine 8.75
- Heating oil, No. 2 ..... 8.125
- Gas oil, 48-52, d.i. 8.25
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- Kerosine 9.65-9.9
- Heating oil, No. 2 ..... 9.15-9.4
- Fuel oil, No. 6 ..... $2.37

Okla-Group 3, northern shpt., bulk
- **Gasoline, 91 oct reg ..... 11.5↑-12.5↑**
- **Kerosine ..... 9.5↓-9.875↓**
- **Heating oil, No. 2 ..... 8.25↓-8.875↓**
- Fuel oil, No. 6 ..... $1.60-1.80

Chicago, bulk
- Gasoline, 91 oct reg 11.5-12
- Heating oil, No. 2 ..... 9.5-10.85
- Fuel oil, No. 6 high sulfur 7.4-7.5

Los Angeles, rack
- Gasoline, 88 oct reg 11.5-12.65
- Diesel fuel, PS 200 ..... 8.5-11.25
- Light fuel, PS 300 ..... $2.80
- Heavy fuel, PS 400 ..... $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 4
- Propane, Baton Rouge 4.625-4.875

Pennsylvania Lubes
- Bright stock, 25 p.t. 22
- 200 vis. neutral 25 p.t. 23

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent 95 v.i. 23-24
- Neutral, solvent, 200-210 vis 19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i. 24
- Neutral, solvent, 200 vis 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130 ..... 16.5
- **Gasoline, 79 oct research ..... 10↑**
- **Kerosine ..... 10.5↓**
- **Gas oil, 48 d.i. minimum ..... 10↓**

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 ..... $2.77-2.97
- North Dakota, 36.0-36.9 ..... 2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ..... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ..... 3.00
  - West Texas, N. M., inter., 36.0-36.9 ..... 2.93
  - West Texas, N. M., sour, 32.0-32.9 ..... 2.71
  - East Texas, flat 3.05-3.25
  - Mirando, 28.0-28.9 ..... 3.31
- Illinois Basin, flat 3.00
- Pennsylvania Grade, Bradford dist., flat 4.25
- California, Signal Hill, 21.0-21.9 ..... 2.50-2.54†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.77-3.02
- Wyoming, sweet, 36.0-36.9 ..... 2.85-2.90
- Wyoming, sour, 32.0-32.9 ..... 2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.) 2.38
- Leduc-Woodbend (Alta.) 2.53
- Redwater (Alta.) 2.42
- Steelman A (Sask.) 2.435
- Virden (Man.) 2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido $3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.10
- Oficina, 35.0-35.9, Puerto la Cruz 2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay 2.30
- Bachaquero, flat, Las Piedras 1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo 2.83
- Lagunillas Heavy, flat, Cardon 2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura $1.89-1.90
- Safaniya, 27.0-27.9, Ras Tanura 1.50
- Iran, 34.0-34.9, Bandar Mashur 1.86-2.04
- Iran, 34.0-34.9, Abadan 1.81
- Iraq, 35.0-35.9, Fao 1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.67
- Qatar, 41.0-41.9, Umm Said 2.05
- Neutral Zone, Burghan, 23.5-24.4, Mina Saud 1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud 1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon $2.27
- Iraqi, 36.0-36.9, Tripoli, Banias 2.31

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, flat $2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean .. (USMC—25%) $2.14↓
U.S. Gulf-New York, dirty (USMC—32½%) $1.92↓
NWI-USNH, dirty ..... (USMC—55%) $1.24↑
NWI-UK/Cont., dirty ..... (Scale—30%) 22/9*
Persian Gulf-UK/Cont., dirty ..... (Scale—70%) 20/10*
Persian Gulf-USNH, dirty ..... (USMC—75%) $3.18

**Sterling.*

DEPT/Personals

WILLIAM G. SWARTZ, JR., has been elected vice-president of Cities Service Oil Co. (Pa.), in New York. He is currently manager of operations and manufacturing. Swartz joined Cities Service Oil in 1947 as a junior engineer. He has served in the company's operating department in Chicago, and as regional superintendent of operations for the company in Kansas City. He moved to New York in 1955.

W. G. Swartz, Jr.

K. H. Gibson

KELLY H. GIBSON has been named executive vice-president and a director of Pacific Petroleums, Ltd., Calgary. He was previously vice-president in charge of production.

M. S. THOMSON is head of the Los Angeles refinery of Union Oil Co. of California. **Walter T. Jameson**, formerly manager of the Los Angeles refinery, replaces Thomson as refinery manager at Oleum (Calif.)

GLENN D. RUCKER moves up to manufacturing superintendent of the Texas City ethylene facilities of the Lion Oil Co. division of Monsanto Chemical Co. He replaces **W. R. Nisbet**, who has been promoted to assistant plant manager, plastics division, at the Texas City plant. Rucker has been technical assistant to **J. B. Rogerson**, vice-president of manufacturing and engineering, since 1957.

W. L. CULBERTSON has been promoted to manager of Phillips Petroleum Co.'s natural gasoline department, in Bartlesville, Okla. He succeeds **G. W. McCullough**, who was recently named vice-president, natural gasoline. Culbertson joined Phillips in Oklahoma City in 1939. He came to Bartlesville in 1943, and was named chief engineer of the natural gasoline department in 1951. He has been assistant manager of that department since 1956.

JOHN A. BOEGE has been appointed assistant to the director of manufacturing of General Petroleum Corp., Los Angeles. Boege, who joined General Petroleum in 1930, was most recently manager of the manufacturing department's Vernon (Calif.) headquarters.

FRED SOLLARS, Humble Oil & Refining Co., has been elected chairman of the new Alaska committee of the Western Oil & Gas Assn. The committee was organized to deal with petroleum business problems in the new state. **William C. Bishop**, Richfield Oil Co., Los Angeles, is the committee's vice-president, and **C. E. Smith**, Union Oil Co. of California, is secretary.

C. J. SENGER becomes treasurer and a director of Warren Petroleum Corp., Tulsa. He succeeds **A. J. Murphy**, who is retiring after 32 years with the company. Senger has been assistant treasurer since 1943.

C. J. Senger

T. M. Dailey, Jr.

THOMAS M. DAILEY, JR., has been appointed manager of the planning and personnel department of Tidewater Oil Co., with offices in Los Angeles. Dailey, with Tidewater since 1955, was formerly executive assistant to the president. Prior to joining Tidewater, he was associated with Humble Oil & Refining Co. and Woodley Petroleum Co.

KIRBY HILLIN has been appointed assistant division civil engineer for Sun Oil Co.'s Southwest division, in Dallas. He was formerly regional civil engineer there. Hillin joined Sun in 1930 as a chainman.

HOWARD M. GUSTAFSON becomes superintendent of marketing, Canadian operations, in Phillips Petroleum Co.'s international depart-

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ment, in Calgary. He succeeds **J. P. Coates,** who is transferring to the company's United States operations. Before his new appointment, Gustafson was assistant mangaer of Phillips' Chicago sales division.

W. H. CREEL moves up to manager of Phillips Petroleum Co.'s refining department, at Bartlesville, Okla. He succeeds **C. C. Tate,** who was recently promoted to vice-president in charge of refining. Creel, with Phillips since 1924, was most recently assistant manager of that department.

W. H. Creel

Dr. J. Q. Cope

DR. J. Q. COPE has been elected vice-president in charge of chemical products and processes for California Research Corp., subsidiary of Standard Oil Co. of California, San Francisco. Cope, who has been associated with Standard of California since 1931, has held several research positions with the company. From 1950 to 1954, he was vice-president and director of California Research & Development Co., a company formed to operate the Livermore (Calif.) project of the Atomic Energy Commission.

K. W. MARTIN is manager of a new administrative services department, recently established by Shell Oil Co.'s head office exploration and production organization in New York. Martin was formerly manager of transport and materials in the company's New Orleans exploration and production area. **J. W. Pittman** succeeds him in that position. **R. M. Lee,** formerly manager of the head office wage and salary division, becomes staff manager of the new department in September. Lee replaces **B. Van Dyke,** who will assume new duties with Shell Development Co.'s exploration and production research division in Houston at that time. **J. M. Sullivan** has been appointed office manager in the new department, replacing **B. D. Vishanoff,** administrative assistant, who is retiring.

E. C. (Ned) BROWN, California drilling contractor, plans to become active as a developer of gas fields in Northern California. He is founder and former sole owner of Brown Drilling Co. and International Brown Drilling Co. Brown's headquarters for gas-well development will be in San Francisco.

J. R. BARSALOU has been named operations manager, and **IKE D. HALL** administrative manager, at Humble Oil & Refining Co.'s Baytown (Tex.) refinery. Barsalou will be responsible for the process, operating services, and maintenance and construction divisions. He has served as general foreman of light oil treating and as assistant head of the coordination division at the Baytown refinery. He also served a year as technical assistant to the manager of manufacturing in Humble's Houston office. Hall will be responsible for Baytown's coordination, accounting, plant protection, employee relations, and medical divisions. Hall joined Humble as a member of Baytown's technical division in 1936. He has just completed a year's assignment in the executive development program, serving as chemical products coordinator in Humble's Houston office.

BENJAMIN G. JONES is the new supervisor of the research section at Tidewater Oil Co.'s Avon (Calif.) refinery. Jones has previously held managerial and supervisory positions at Avon and at Tidewater's Delaware refinery. He was most recently assistant to the manager of the Delaware refinery.

LAUREL G. PARKINSON is the new general manager of marketing for Amoco Chemicals Corp., Chicago. He has been general sales manager of chemicals since 1958. Before that, he was manager of the industrial chemicals department of Lever Bros.

L. G. Parkinson

H. W. Peterson

HARRY WILLIAM PETERSON is the new product manager, chemicals, for Enjay Co., petrochemicals marketing affiliate of Standard Oil Co. (N.J.). He replaces **A. C. Matthies** who will serve on a loan assignment in London until early 1960. **Vernon D. Herbert** takes over Peterson's former post as assistant product manager, chemicals. Peterson, with Enjay since 1947, has also served as assistant sales manager, alcohols and chemicals; assistant manager, alcohols and chemicals; and assistant manager of the chemicals division. Herbert joined Enjay in 1947 as a chemical engineer. Most of his activities have been in the manufacturing and coordination functions of chemicals and paramins.

JAMES A. CHRISTENSEN is the new manager of Standard-Vacuum Oil Co.'s economic coordinator department, with offices in White Plains, N. Y. He succeeds **Willem Holst,** who was recently elected a Stanvac director. Christensen joined Stanvac in 1953 as assistant manager of the economic coordination department. He had previously served 25 years with Esso Standard Oil Co.

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Cutting Prices Can Create a Furor

ATLANTIC REFINING'S PRICE CUT for East Texas crude stirred up an unusual amount of comment inside and outside the oil industry. Some remarks made sense; some didn't.

Lost in the hubbub that the action raised is the fact that Atlantic, or any other company, has the right to decide what its posted prices for crude and products will be.

At least two producer associations, quite naturally, opposed Atlantic's decision—and they have every right to say so.

But for two other commentators, Atlantic's move triggered an unnecessary attack on the entire oil industry.

The Texas attorney general, Will Wilson, for example, wasted no time in publicly threatening antitrust proceedings against companies that might follow Atlantic's adjustment. He said, in part: "We will raise a warning flag for the entire industry, pointing out the danger of possible antitrust violation through concerted action."

The New York Times was also quick with an editorial attack—not against the price cut, but, in fact, proposing more cuts.

Taking note of the Texas attorney general's comments, the Times stated: "Mr. Will Wilson . . . was horrified. He announced that he would quickly look into the action 'to determine whether or not it violates any Texas law.'"

"We trust it does not," said the Times. "We trust that the Atlantic action will stand, and we dare hope that it may lead to some price reductions at the filling station. For not even the great State of Texas can wholly frustrate the law of supply and demand, even with the help of federal action curbing oil imports. No matter how hard governmental agencies try to prevent it, consumers may yet get a break."

IT'S BAD ENOUGH that Atlantic found its price cut necessary. But it's worse that the Texas attorney general should feel required to warn the entire industry against what individual companies may consider proper business decisions.

And it's still worse for The New York Times to make an unfounded plea for a "consumer break," when a look at U. S. "filling station" gasoline prices shows that the consumer is getting all the breaks. The retail price of regular-grade gasoline on July 1 in 55 representative cities was 21.32¢ a gal. ex federal, state, and local taxes. A year earlier it was 21.37¢ and in July, 1956, it was 21.62¢.

WHERE THE CONSUMER COULD USE A BREAK on gasoline would be in a reduction in taxes on the motor fuel he buys, instead of the ever-increasing clamor for higher gasoline taxes.

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